OTTAWA REFUGE

N A R R A T I V E R E P O R T

1 9 6 6

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

OTTAWA NATIONAL WILDLIFE REFUGE
CEDAR POINT NATIONAL WILDLIFE REFUGE
WEST SISTER ISLAND NATIONAL WILDLIFE REFUGE
NAVARRE TRACT
OAK HARBOR, OHIO

REGULAR PERSONNEL

Alfred O. Manke	Refuge Manager
William C. Bair	Asst. Refuge Manager
Alson J. Radsick	Maintenanceman
Clarence L. Sayen	Biological Aid
Mary E. Bradley	Clerk-typist (Intermittent)

TEMPORARY PERSONNEL

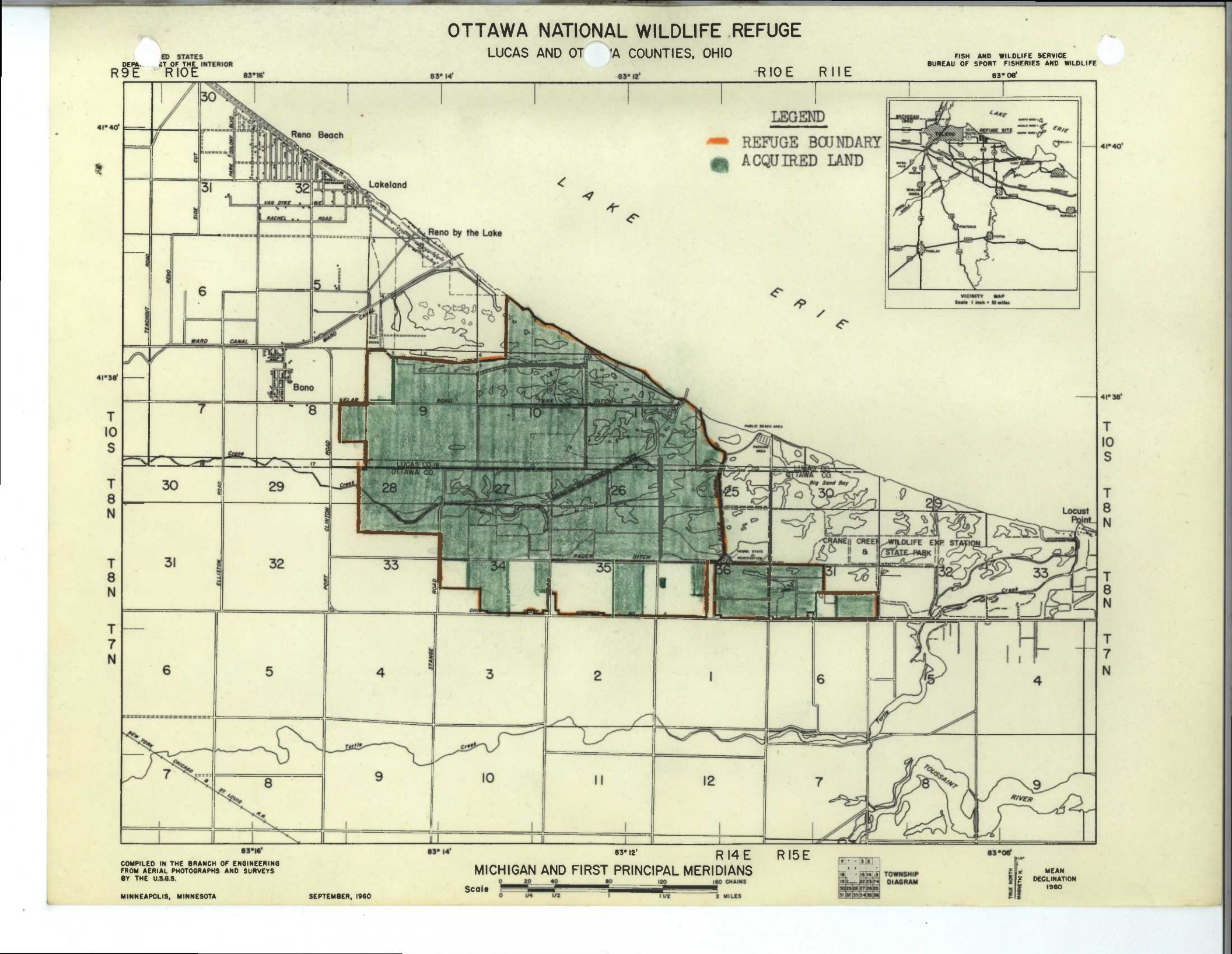
Benjamin R. Chio, Jr.	Laborer (EOD 08-30-65) (TERM. 05-06-66)
Willard B. Hesselbart	Biological Technician (EOD 05-02-66) (TERM. 08-27-66)

OTTAWA NATIONAL WILDLIFE REFUGE

LUCAS AND OTTAWA COUNTIES, OHIO

UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE



COMPILED IN THE BRANCH OF ENGINEERING
FROM AERIAL PHOTOGRAPHS AND SURVEYS
BY THE U.S.G.S.

MINNEAPOLIS, MINNESOTA

SEPTEMBER, 1960

MICHIGAN AND FIRST PRINCIPAL MERIDIANS

Scale 0 20 40 80 120 160 CHAINS
0 1/4 1/2 1 1 1/2 2 MILES

TOWNSHIP DIAGRAM

MEAN DECLINATION 1960

C O N T E N T S

I. GENERAL

A. Weather Conditions

	Precipitation			Max.	Min.
	Month	Normal	Snowfall	Temp.	Temp.
January	.46	2.33	5.3	51	-6
February	1.46	1.88	4.5	62	-1
March	1.82	2.26	7.9	71	5
April	2.81	2.77	1.1	80	23
May	1.88	3.04	trace	90	27
June	3.42	3.79	0	96	38
July	5.65	2.59	0	96	49
August	4.60	3.33	0	90	48
September	1.17	2.13	0	89	34
October	.97	2.69	0	77	23
November	4.63	2.04	17.9	66	20
December	5.12	1.95	13.6	65	-1
Annual Totals	33.99	30.80	50.3	Extremes 96	-6

Weather data as recorded at the Toledo Express Airport by the United States Department of Commerce Weather Bureau, approximately 30 miles west of the refuge. Weather conditions at the airport are believed close enough to those on the refuge to be used without modification.

January and the new year of 1966 began gloriously. New Years Day was a bright, sun-shiny day with the temperature reaching 45°. Shortly thereafter deterioration set-in. Below average temperatures and strong winds prevailed through June. The winter of 1965-1966, however, was still considered "open and mild" because precipitation particularly snowfall was well below average.

A. Weather Conditions. (cont.)

The area was in the deep-freeze stage throughout most of January, February and early March. Our spring thaw occurred just about on time, mid-March.

Northeast winds of 25 to 30 m.p.h. with gusts to 45 m.p.h. on April 26, 27, and 28 caused Lake Erie to wreck havoc on lakeshore and facilities. Dikes were breached, cottages ruined, roads destroyed, trees up-rooted and sand beaches shifted a mile or more. Our Cedar Point Refuge lake-shore dike took the brunt of the wave action and suffered our greatest damage (see photos). At the height of the blow the general lake level rose over seven feet, and waves eight to ten feet high were being generated on top of this.

On May 10, a low of 27° occurred. Some weather stations in Ohio recorded even lower temperatures on that date, and several all-time lows were recorded. June was conspicuous by being almost normal.

Our drouth was broken in July. Thunderstorm activity occurred for six straight days, July 9-14. The heaviest rain fell on July 12. Sandusky, about 25 miles ESE of the refuge, recorded 10.51 inches between the hours of 2:00 A.M. and 9:30 P.M.. Over six inches fell between 2:00 A.M. and 7:00 A.M.. The refuge did not receive as much rain as Sandusky but was heavily drenched. Fields, basements, and roads were flooded.

June and August should pledge their troths as they were the only near normal couple of the year. Scattered frosts were reported as early as September 16. October was dry and windy. Westerly winds of 15 to 20 m.p.h. prevailed the entire month. This just about eliminated our water supply and greatly curtailed water manipulations. Freezing temperatures occurred several times during October with a low of 23° recorded on the 30th.

On November 2 and 3 we were blanketed with about one foot of wet snow. This was an unusually early and heavy snow storm and disrupted things in general. A total of about two feet of snow fell in November. Very unusual, in fact more snow fell in November 1966 than did during the entire previous winter.

Melting snow, heavy rains, and saturated soil in early December combined to cause the refuge and surrounding area to flood (see photo of Q-5). Our pools (marshes) were filled as were basements, roads, woods, fields, and everything else.

B. Habitat Conditions.

1. Water. Water manipulations of the refuge impoundments are closely tied to Lake Erie water levels. If Lake Erie is high we experience difficulties in discharging water and lowering pool levels. If Lake Erie is low it becomes almost impossible to fill our marshes with water.

Lake Erie water levels in 1966 closely parallel the latest ten-year average, but was still about a half-foot below the average levels for the period of record (1860-1965). The lake level took a sharp drop beginning about the first of September, and fell well below the ten-year average for the next three months. This is a significant factor in our marsh management and in meeting or departing from our water program. The mouth of Crane Creek remained open throughout 1966. Consequently, it had little effect on management this year.

Our total precipitation for the year was close to average. Precipitation, however, was very deficient during September and October just when we wanted it most.

Lack of precipitation and the sharp decline in the water level of Lake Erie during the critical period of September and October greatly curtailed marsh flooding. This of course created less than ideal conditions for waterfowl, and caused some deviation from our proposed water program. Over four and one-half inches of precipitation in November and over five inches in December filled or overfilled all marsh areas capable of holding water.

Goosehaven, Pool 1. Water area was considered adequate to meet wildlife needs through July. The water level fell below the desired level in August and first half of September. Some water was gained after a tube connecting Pool 1 with Magee Marsh was installed about mid-September, but the water level was still below that desired through October. Pool 1 was considered in excellent condition in November. By the end of December the water level was a little higher than desired. It was still considered excellent for waterfowl, but may result in more damage to our unrehabilitated, east dike than necessary. Cattail encroachment in this pool was slight in 1966. There was quite an invasion of giant bur reed. Almost all whistling swans that stopped at the refuge stayed in Pool 1. Pool 1 was also the favored area for the majority of the ducks (all species) on the refuge in late October and early November.

Swandive, Pool 2. Pool 2 contained a desirable amount of water throughout the year until December when it became over-filled. It still provided a good marsh-open water complex, but flooded some nesting area and placed unnecessary stress on dikes. Pool 2 supported a large population of muskrats that cleared about 95 percent of the cattails from the marsh. Pool 2 had a total of more duck and goose-days use than any other area on the refuge. Pool 2 is home-base for Ottawa's goose flock.

Pintail Marsh, Pool 3. An attempt to hold the water level somewhat higher and more constant than normal, failed. The combination of seepage, evaporation, and trespass fishermen opening tubes proved to be more than our water supply and pumping facilities could match. Cattail encroachment was quite substantial; just the opposite of what we were planning to combat with the higher, more constant water level. Except for wood ducks, waterfowl usage was the lowest it has been in Pool 3 since the inception of the refuge. The lake-side dike of Pool 3 was damaged rather severely in the April-blow.

Willow Point, Pool 4. This was the first year this area was under control of the refuge. Water levels fluctuated with Crane Creek through April because of a breached dike. The dike was patched and pumping was accomplished whenever water-supply conditions permitted. This provided a moderately good marsh-open water complex. No cattail encroachment was observed. Ducks, geese, and swans all made use of Pool 4.

Redhead Flat, Pool 5. This pool fluctuated with Crane Creek throughout the year. All attempts to patch the badly deteriorated dike failed. Ducks would use the marsh very much during periods of high water. There was an abundance of food (primarily smartweed) that proved to be very attractive when the area would flood. Waterfowl usage of course was very sporadic and for rather short periods.

Woodies Roost, Pool 6. An insufficient water supply for this marsh precluded intensive management. The water-level fluctuated markedly, and at times there was little open water available. This marsh is clogged with cattails. A tube connecting it with Magee Marsh was installed in early January 1967. This should permit much better management and cattail curtailment in 1967. Duck usage was moderate except for wood ducks. As the name implies this is a favored haunt of wood ducks.

Mallard Bay, Pool 7. Run-off and intermittent pumping held the water level in this pool rather constant until November when flood waters over-filled the area. Water was discharged in December to minimize dike damage. In 1965 it had been permitted to recede to facilitate establishment of wet-meadow areas on the higher ground within the dike. Cattail encroachment had been substantial. Higher water levels and a large population of muskrats in 1966 almost completely eliminated the cattails. Waterfowl-use of Pool 7 was moderate.

Widgeon Slough, Pool 8. Dike and tube leaks prevented holding water as desired from January through April. After the leaks were stopped, pumping was initiated at every opportunity. This area, however, seemed plagued with broken mirrors. Much trouble was encountered with pumps, engines, fishermen, etc.. A desired pool was not established until November. This marsh adjoins two large agricultural units that were the favored feeding areas for ducks and geese from September through December. Consequently, after a satisfactory pool was established it had very high waterfowl usage. Cattails clog one end of pool 8 and brush has invaded the other end. Good dikes and intensive management will be necessary for this pool to gain its high potential.

2. Food and Cover. Food and cover were considered adequate for all species inhabiting the refuge. No artificial feeding was necessary.

Waterfowl. Except for the last week in January there were always a few "open holes" in the marshes, and Lake Erie was free of ice about a half-mile from shore. Consequently, waterfowl always had open-water areas available to them on or near the refuge. We seldom had more than an inch or two of snow cover, so weed seeds, waste grains, and green browse were available almost 100 percent of the time. Refuge corn fields were "chopped" in late January, Although none had much corn left almost all of the waterfowl immediately turned their full attention to these fields.

Melting snow and rain created numerous puddles in crop fields throughout much of February. This of course made "duck soup" particularly in the chopped corn fields. Waterfowl responded accordingly. These excellent conditions prevailed almost through March. By the end of March field-feeding ducks and geese had gleaned just about all food possible from the farm fields. At about this same time the species composition of the waterfowl population changed rapidly. Mallard and black ducks moved out, and teal, shovelers, woodies, ringnecks, and hooded mergansers moved in.

To back-up a step, either food was scarce or for other reasons the main flock of whistling swans by-passed the refuge. Instead of a peak of from 2,000 to 5,000 as has occurred in recent years, no more than 350 were sighted at any one time. Normally the swans settle down in Pool 1. Pool 1 was held dry from May to October in 1965 to facilitate dike rehabilitation. Although this probably played some part in the boycott, the swan migration and spectacle in no way reached normal proportions in this whole general area in 1966.

From early April through late July waterfowl were dependent upon natural foods in the marshes. Any food that remained in farm fields either on or off the refuge by mid-April was rapidly being covered by the plow. April through July is the primary nesting and brooding period. Water and emergant vegetation were considered more than adequate to supply cover for the broods of ducks produced on and around the refuge.

The end of July marked the beginning of abundance. Wheat and oat fields were harvested. On the refuge farm cooperators are required to chop the straw. Straw-chopping is also a rather common practice off the refuge, and this generally makes these fields very attractive to ducks, doves, and other birds. As the waste grains in these fields became scarce many natural foods matured. Soybean harvest started in September and continued through October.

> To digress in deference to the soybean-waterfowl-compaction controversy; be they good or be they bad soybeans are here to stay, and ducks and geese seem to take to these harvested soybean fields like they take to water. On Ottawa Refuge almost all soybean fields are disced shortly after harvest and sown to winter grain. This, however, does not stop the ducks and geese from feeding on soybeans off the refuge. Also, if there is a lapse of only a few days or at times even a few hours between the soybean-harvesting operation and winter-grain soil preparation, this seems time enough for many ducks and geese to glut themselves. No harmful effects were noted that could be specifically labled soybean troubles. This, however, is only an opinion formed from casual observations. No intensive, systematic searches, surveys, or studies have been initiated here at Ottawa.

Ducks and geese fed heavily in the harvested soybean fields throughout October and November. They also returned to the harvested soybean fields in December, and if past behavior is any criteria, they will return to these fields again in February and March. During the October through December period geese also grazed the wheat in fields that were planted early, and the alfalfa particularly those fields sown to alfalfa in 1966.

Planting "dwarf" corn only was manditory for all farm cooperators in 1966. Our abnormal blanket of snow and its aftermath of field puddles in early November was all the invitation needed for the ducks and geese to "hit the corn." From early November to the end of the year ducks and geese heavily utilized the standing corn particularly during extremely wet and flooded conditions.

Other Wildlife. Except for a flood that had water covering about 40 percent of the refuge for almost two weeks in early December, food and cover were considered adequate for all species of wildlife. Cottontail rabbit and groundhog losses were greatest, but during the height of the flood even muskrats and snakes were seen floundering in the strong current and seeking refuge from the waters. Some did not make it. There was also a noticeable drop in the pheasant population after the flood. Some moved to safer locations, but some perished.

Dwarf corn was again well accepted by pheasants, doves, and deer. This year, however, it was also well accepted by the blackbirds. Although this was not totally unexpected, it was still a bit discouraging. Last year we seemed to sustain less blackbird damage in the dwarf corn than did our neighbors who planted regular corn. And so it goes; well back to the drawing board. In 1967 we will plant some grain sorghum in an attempt to find a crop other than soybeans that is well accepted by waterfowl and at least partically rejected by blackbirds.

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl. On January 4, 1966, the mid-winter aerial count conducted by State Waterfowl Biologist Bednarik and G.M.A. Fuchs listed 3,400 Canada geese, 3,500 mallard ducks, and 2,500 black ducks on Ottawa Refuge. Shortly thereafter the waterfowl population dwindled to about 600 Canada geese, 1,000 mallard ducks, and 1,000 black ducks. With minor fluctuations the waterfowl population remained at about this level until almost mid-February. Consequently, it is considered our "wintering flock." During this time of the year, the duck population can fluctuate rather wildly and erratically and it seems of no particular significance. It is interesting to note, however, that in 1964 we had a winter population of only 40 Canada geese.

In 1965, 200 Canada geese stayed, and in 1966, 600 "sweated-out" the deep-freeze period. At the present writing (late January 1967) we still have almost 2,500 Canada geese on the refuge. Granting that we have had mild winters the past four years, a trend seems to be starting. Unless we have a few harsh winters in the near future we may establish another wintering flock north of the Mason-Dixon line. Presently we are doing nothing to reverse the trend. In fact, we probably are aiding and abetting the establishment of a wintering flock. Through a cooperative agreement with the State of Ohio, we now have a goose-pen and a captive flock of about 125 Canada geese on the refuge. The intent is to establish a free-flying nesting-flock of geese on the refuge. The captive geese, however, are kept in an open pen (wire enclosure) and fed year-round. Consequently, the captives are good, live decoys, and free-loading, wild geese can and do help themselves to some of the captive's feed.

During the second week of February the mercury climbed to 49 degrees. Our duck population increased to over 3,000 and a week later to 6,000. By the end of February the spring migration was in full sway and our waterfowl population included about 800 Canada geese, and 10,000 ducks and 10 whistling swans.

Our peak waterfowl population during the spring migration occurred the third week in March and included 350 whistling swans, 1,500 Canada geese, and 10,000 ducks. This is much lower than our 1964 and 1965 peak populations.

Peak Waterfowl Population - Spring Migration

Year	Whistling Swans	Canada Geese	Ducks
1964	2,000	2,500	25,000
1965	1,500	2,500	16,500
1966	350	1,500	10,000

By May 1, just about all migrants had departed. The refuge population had decreased to about 1,500 ducks. Although blue-winged teal, wood ducks, and mallards seemed to predominate, we banded and/or frequently observed redheads, American widgeon, shovelers, pintails, and blacks in late June. Any birds here at that time of the year are considered summer residents and probable nesters. However, only blue-winged teal, mallard and woodduck nests were found in our waterfowl nesting survey.

Our nesting survey resulted in disappointing results. Better techniques will have to be developed to produce reliable data. Brood counts and the number of immature mallards banded belies the paucity of nests found. One indisputable factor that the nesting survey did show is the poor nesting success we do not enjoy. A recheck of the nests found showed only a 25 percent nesting success for blue-winged teal, and 50 percent for mallards. Also, not all eggs had to hatch to be classed as successful, i.e. one mallard nest classed as successful had only 3 of 9 eggs hatch. Raccoons were the chief culprits, mowers second. On the brighter side is the apparent acceptance of our wet meadows of blue-winged teal, and our nesting structures by wood ducks. Over 50 percent of the blue-winged teal nests were found in our rather recently established wet meadows (see photos). Out of 51 wood duck nesting structures put out this spring, nine were used and successful. Some of the structures were placed as late as March 25. Starlings were the chief competitors for the structures. An estimated 900 ducklings and 100 coots were produced on the refuge.

A noticeable increase in our duck population began about mid-July. Except for about two weeks in September it continued to increase to a peak of 30,000 in mid-November. This population of about 30,000 ducks continued to mid-December, then decreased to about 15,000 by the end of the year.

Although reported as early as September 10, refuge personnel first observed Canada geese on September 15; a flock of 25. The flock increased rather steadily until a peak of 6,000 was reached by the opening day of hunting season, October 22. The guns must have been too much for about half of them that moved on. Our flock remained at about 3,000 until mid-November. It then took another drop, fluctuated some, but as the January 9, 1967, mid-winter count indicated hovered around the 2,500 mark through the end of the year.

Peak Waterfowl Population - Fall Migration

Year	Whistling Swans	Canada Geese	Ducks
1964	6	2,000	10,500
1965	0	1,000	8,500
1966	20	6,000	30,000

Our higher peak and increased waterfowl-day-use figures for 1966 are obviously attributable to a wide range and variety of factors. One of the most important, however, is believed to be the acquisition of some 1,260 acres of land in the center of the refuge. This included almost 1,000 acres of good cropland. Some 75 acres of corn were left standing in these fields to help feed the wildlife. In addition, several hundred acres each of wheat, soybean, and alfalfa supplied a lot of food. Ducks, geese, and even some swans fed in this area for well over two months, and for at least one month of this time they fed almost exclusively here. Acquiring this area also eliminated much of our patch-quilt ownership which in turn eliminated interior hunting. In previous years our waterfowl did not "know" where they were safe and where they were not. Consequently, many never seemed to get "settled."

Three somewhat unusual sightings occurred. An albino mallard was observed quite frequently for over a month. A Canada goose bearing a plain yellow collar was observed November 10. This station still has not heard when or where it was banded. A whistling swan with a pink-dyed neck wearing a plain yellow collar visited the refuge December 13 through 18. This is one of between 35 and 40 so marked and released at Shiawassee Refuge in November.

2. Other Waterbirds. Migration dates and numbers, feeding habits, and nesting locations were all considered normal. American egrets, black-crowned night herons, great blue herons, and green herons are the most conspicuous species during the warm months (April - September). At least 20 great blue herons are year-round residents. How they survive the winter months is a mystery to the writer. American egrets and black-crowned night herons were seen first on April 4. No black-crowned night herons were seen after October 15, and no American egrets after October 28.

Our April 26, 27, and 28, "blow" certainly must have disrupted some egret and heron nests on West Sister Island. It is with some embarrassment that the writer reports that an assessment of the probable damage was not made until too late.

Except for short periods during migrations our coot and gallinule populations continued a moderate decline for the second year. A contributing factor may be the reduction of cattails in two marshes. Cattails are, however, still as thick as the proverbial "hair on a houn' dawgs back" in much of the marsh area.

3. Shorebirds. At times herring and ring-billed gulls out-number all other birds included in this general group combined. Their scavenging habits, however, put them in the "strip-tease" act. Now you see them, now you don't. Some nest on West Sister Island, but no nests have been found on Ottawa. Favorite feeding and resting spots on Ottawa Refuge is the "open bay" portion of the Pintail Marsh and at the mouth of Crane Creek. Throughout the summer common terns and occasionally a sooty tern are observed with or near the gulls, particularly at the mouth of Crane Creek. In the winter about a dozen great black-backed gulls are mixed in with the other gulls. About 200 black terns feed and nest in the marshes seldom straying very far out over Lake Erie.

   For the third consecutive year plover and sandpiper populations have diminished. Again, the only noticeable change that would contribute to this decline is less "mud-flat" area. Killdeer is an exception to this shorebird population decline. Also sightings of ruddy turnstones feeding along the shoreline of Lake Erie have increased.

4. Doves. Mourning doves are year-round residents with peak populations coinciding with spring and fall migrations. No significant changes were noted in behavior, population, feeding, and nesting patterns. Ohio has no open season on doves.

B. Upland Game Birds. Pheasants inhabit dense stands of cattails and brush that encompasses well over 1,000 acres. The thick, almost impenetrable cover makes any kind of a count or census difficult. Despite the lack of an exacting census to substantiate it, our pheasant population decreased an estimated 20 percent. This was even prior to the early December flood. There are no apparent reasons for this decrease.

   As development and more intensive management progresses there will be some decrease in the upland game habitat. In fact, the rehabilitation of some dikes and the reduction of cattails in some marshes have already stirred some criticism of the refuge. To date, however, the decrease in upland game habitat has not been great enough to cause a 20 percent decrease in the pheasant population. The present population is considered well above the critical point.

   Seventy-six pheasants were live-trapped and removed for a research project by a graduate student at Ohio State University working under Dr. Bookhout.

   Dike work and inclement weather again prevented the woodcock census route from being run.

C. Big Game Animals. White-tailed deer is the only species of big game animals inhabiting the refuge. Sightings were infrequent and few. One doe was struck by an automobile on State Route 2, and managed to crawl with both front legs broken for a half-mile into the refuge. It was mercifully dispatched by a State Conservation Officer. Other than this one animal all others observed appeared to be in excellent health. No noticeable browse line has developed. Deer, with the help of the blackbirds of course, consumed almost every kernel of corn in one of our 16-acre fields near their favored haunt. A herd of 15 was observed at this location in January 1966. The estimated number of deer spending at least part of their time on the refuge is 25.

D. Fur Animals, Predators, Rodents, Other Mammals.

1. Fur Animals. Muskrat, mink, raccoon, and skunk are the fur-bearing species in this area. If the present trend towards higher prices for fox pelts continues, this species will have to be added. Presently, however, trappers still seem to be more or less ignoring fox.

Muskrats are the most important economically. Not because of high pelt prices, but simply because of the number available and trapped. Also, in this area the carcasses or "meats" are at times worth almost as much as the pelts. One trapper this season sold over 2,500 "meats" at $.40 each. Muskrats are economically important to the refuge for their cattail control work and damage to dikes. Last year we had an almost complete eat-out in a segment of marsh clogged with cattails. Some 435 houses were counted in the 45 acres. The water level in this segment was held rather constant this year and we had no reinfestation of cattails. This year the muskrats moved to marshes on both sides of this segment and "cleaned-out" some 200 acres more (see photo), and have a good start on another 500 acres. It is impossible to assess the damage, and therefore repair costs, muskrats do to our dikes. Our worst breaks generally show a combination of factors. The breached section was constructed with inferior materials (silt or muck) and was honey-combed with groundhog burrows and tree-roots. The muskrat burrow, or muskrat if you prefer, is merely the triggering device.

Our raccoon population increased and our skunk population remained about the same as last year. Few trapper seek these species. No rabid animals were observed or reported during the year. An almost insignificant population of mink inhabits the refuge and surrounding area.

2. Predators. Raccoons, foxes, skunks, dogs and cats are our primary predators. This predator population is sufficient to exert some undesireable pressures. Our major concern is the adverse effect on duck nesting and success. Dogs and cats are far too plentiful on the refuge. They will probably always be a problem at Ottawa Refuge because of its close proximity to towns and farms.

Our fox population has increased again. Several were seen feeding on carcasses of geese and ducks this winter, and one kill of a goose was observed. We could have much help in a fox-reduction program if initiated. Several fox-hunting groups are just "itching" to hunt Ottawa and Cedar Point refuges. One such group no longer uses hounds. They purchased a "Bombardier" or similar rig with which a couple pursue the quarry until someone shoots it. At least half of this group is also equiped with walkie-talkies or two-way radios to help them in their quests. So far this winter they have taken about 35 foxes with only one mishap. One cold day the two "hounds" operators of the rig, took-on a little more "anti-freeze" than their capacities, and one bounced off the rig crossing a corn field and broke his arm. Moral: lookout for that "corn." To date, we believe the disadvantages of opening the refuge to fox hunting still outweigh the advantages.

A dummy nest study is planned to be initiated in 1967 to determine whether or not to initiate a predator control program.

3. Rodents. Groundhogs continue to be the number one problem species. Approximately 1,000 dens were "bombed" in 1966. Whether its lack of technique, some faulty bombs, or extra hardy groundhogs is unknown, but bombing seems to be only about 60 percent effective. Bombings coupled with the December-flood must certainly have put a dent in the population. In view of these circumstances we will attempt another saturation bombing raid in 1967. No noticeable change in the squirrel population was observed. Norway rats continue to infest several old barns.

4. Other Mammals. Until the December-flood cottontail rabbits were abundant. The flood destroyed some, rendered others homeless, and made them all vulnerable to poaching. Roadsides offered some of the only dry area available. A few culprits took advantage of this condition and drove the roads at night shooting as they went. They would not take the time to retrieve their illgotten gains but just leave the dead strewn in their wake. Chase was given but none were caught. A very high population of cottontails may be able to be used for brush control similar to muskrats for cattails. Their brush-girdling tactics shows promise in some areas.

E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies.

For the past two years spring and fall migrations of hawks have not been spectacular. Resident populations, however, have been fully as large or larger than in some previous years when more spectacular migrations held sway.

Our owl population continues to remain high considering the small area of woods on the refuge. Screech, barn, barred, great horned and short-eared owls were observed. An immature saw-whet owl was found in Toledo (first record of immatures in this area) and brought to headquarters. It was banded and released on the refuge.

Our nesting pair of bald eagles were observed regularly although there were periods of several weeks duration when they evidently moved to other areas. An immature eagle was also observed a few times.

Rather close watch was kept on the eagles during the nesting season. Some nest improvements and additions were made late in January and sporadically through February. By mid-March we thought that incubation had started but we were not sure. No close observations were made for fear of creating a disturbance. Good observations in April left no doubt about incubation and hopes were high. The eagles became disinterested in the nest in mid-May. We waited until about mid-June to check the nest, and found one unhatched egg, and no indication that any others had been laid or hatched. The egg was sent to Patuxent, but so far we have had no report of their findings. We doubt that disturbance was a factor in the egg not hatching. Good, solid incubation occurred for at least 45 days.

Undoubtedly the large population of predatory birds exerts some pressure on other species of wildlife. Just how much has not been determined. In November a mature bald eagle was observed sitting on a muskrat house. Ducks and geese swam and fed within 25 feet of the eagle. The eagle hopped down from the house into the very shallow water. This caused the ducks and geese no apparent concern for they did not move away or even flutter. A low-flying airplane rallied all of the birds to disrupt the otherwise tranquil scene.

Despite this one tranquil occurrence, we had one "eagle complaint." A dog-owner some five miles from the refuge claims an eagle attack his best beagle. Although the dog was not killed it did require the attention of a veterinary and was ruined. He threatened to kill the eagle if it returned to his property.

For the second successive year the spring migration of crows has been small. A few more crows remained and nested on the refuge than in previous years. Our summer population of about 25 crows, however, is still well within tolerable limits.

F. Other Birds. No unusual observations or sightings to report. By now volumes have been written concerning blackbirds. All previous narratives described crop damage and impact on other species of wildlife on the refuge. Little can be gained by repeating this information. All that happened in previous years occurred again. The writer is convinced, however, that the hordes of blackbirds do not deserve all the abuse that has been heaped on them; only 99.99 percent of it. Their cheery calls are welcome harbingers of Spring.

G. Fish. Carp is virtually the only species of fish inhabiting refuge pools. All pools except Pool 1 are badly infested. Drawdowns in Pools 1 and 3 in 1964 and 1965 eliminated the carp from these two. Pool 3 was reinfested when trespass fishermen opened tubes to create a current.

We plan to eliminate carp from Pool 2 in 1967. The pool will be dried as much as possible to facilitate dike rehabilitation. Chemicals will be used in ditches and pockets within the pool that contain enough water to sustain carp. A fish-screen with a frame that fits the tracks of the gate-valve helped prevent reinfestation of Pool 1. It is simple enough and sufficiently effective that others to fit tubes of other sizes will be made as needed.

H. Reptiles. This group continues to be of little consequence to the refuge.

I. Disease. No disease other than lead poisoning observed. An estimated 60 Canada geese, mallards, and blue-winged teal died from lead poisoning. Effects of the poisoning became much more noticeable during periods of stress, primarily when food was not readily available and ice covered much of the water in the marshes.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

Water facilities. Dike and pump repairs consumed the major portion of the work years. Some 250 feet of 18" diameter tubes were installed in the goose pen. Another 200 feet of 18" diameter tubes with pressure gates were installed in dikes for better water control. Two hundred feet of 36" diameter tubes with lift gates were installed in dikes to enable the refuge to receive water from State-owned Crane Creek Wildlife Experiment Station (Magee Marsh). Eight pumps were overhauled. Seven electric motors on pumps quit. Three had to be replaced with new motors and four were repaired. One gasoline engine "threw-a-rod" and had to be replaced. Replaced compressor unit with water pump on trailer mounted power unit. Almost two miles of dike-top was graveled. Approximately 1,000 feet of dike facing Crane Creek were rip rapped. About 500 feet of wood sheathing was driven to plug gaping holes in dikes and form cribs for earthern fill.

Roads and Trails. Three "pipe" gates were fabricated and installed, and two fence-type gates were purchased and installed in our participation in the goose-pen project.

Fencing and Posting. State personnel constructed the goose-pen fence enclosing approximately 50 acres. Our boundary markers were straightened and replaced as needed.

Buildings and grounds. Thirteen buildings declared excess and non-saleable were burned. These burnings eliminated some unsightly structures and furnished some training to Army Reserve Units and Job Corps personnel. One house was rehabilitated for occupancy. One building was removed from headquarters area to the shop area as part of the land-scaping at headquarters.

B. Plantings.

1. Aquatics and Marsh Plants. None.

2. Trees and Shrubs. None except to transplant two red cedar trees and other greenery. Trees and shrubs were removed from vacated refuge-dwelling to headquarters.

3. Upland Herbaceous Plants. Approximately 90 acres were sown to a grass-legume mixture for goose pasture and duck nesting. Wheat was used as a cover crop, and to provide additional browse. Moderate to good results are anticipated. This is part of the development plan to provide about 500 acres of wet meadow to increase duck nesting and success. Previous years plantings are considered successful. Grass-legume mixtures include tall fescue, perennial ryegrass, timothy, redtop, and alfalfa. In some of the wetter areas, ladino clover will be used to replace the alfalfa.

   Sericea lespedeza was sown along a section of the nature trail and under a row of fruit trees to hold-down undesirable vegetation, hold the soil, and provide food and cover for upland game species. A moderately good catch was obtained. This was gratifying. Quite often Sericea does not show too well until the second year. We are not sure just how well Sericea will do in this climate and soil.

4. Cultivated Crops. Fourteen cooperators farmed 1,757 acres. Refuge and Job Corps personnel farmed 90 acres as reported in the preceding paragraph, Upland Herbaceous Plants. Yields were disappointing. After compiling the weather section, however, this is understandable.

Crops grown and respective average yields include corn 70 bu./ac. (before blackbirds) 40 bu./ac. (after blackbirds), soybean 20 bu./ac., wheat 35 bu./ac. (before blackbirds) 30 bu./ac. (after blackbirds), oat 75 bu./ac. (before blackbirds) 50 bu./ac. (after blackbirds), and alfalfa 3 tons/ac.. All corn grown except for eight acres belonged to the refuge and remained standing in the fields. Cooperators were again permitted to substitute soybeans on their two-thirds of the acreage scheduled for corn. Only dwarf corn was grown.

Farm cooperators were required to apply 10.75 tons actual nitrogen, 18 tons actual phosphate, and 32 tons actual potash to replace nutrients removed by the crops. Through share-crop reductions the refuge applied 56 tons actual phosphate, 10 tons actual potash, and 290 tons of lime. In addition, 12 tons of 12-12-12 were applied in connection with the goose pen and wet meadow seedings. The total value of fertilizers applied is about $20,000. The total gross value of the crops produced is an estimated $80,000.

C. Collections and Receipts.

1. Seed or other Propagules. No harvests or collections were made. One hundred ten bushels of seed-wheat were purchased for cover and browse crops in the goose pen and wet meadow. One hundred fifty bushels of shelled corn were hauled from Shiawassee Refuge for baiting traps.

2. Specimens. None.

D. Control of Vegetation. No chemical control activities in 1966. Weeds and grass along dikes, trails, and wet meadows were mowed. Some brush on dikes that interfered with work projects were hand-cut.

E. Planned Burning. Thirteen buildings declared excess that had no resale value were burned. No other burning was planned.

F. Fires. None on the refuge. Our Job Corps Conservation Center, however, had a serious building fire which was a serious set-back to the program. At 12:25 A.M. April 5, 1966, a fire broke-out that completely destroyed the only dormitory being occupied. At the time 55 corpsmen and 2 resident workers were in the building. All escaped unhurt. All personal belongings and furnishings were destroyed. The cause of the fire was traced to the faulty installation of a gas hot-water heater. Loss of the building and furnishings was estimated to be $111,000, and the total loss amounted to about $117,000. The corpsmen were moved to the other dormitory that was nearing completion. This, however, stopped the Center from reaching its capacity in 1966. The next group of corpsmen had been scheduled to arrive between May 1 and May 15. The burned dormitory is being replaced with two new dormitories and the Center expanded to a 168-man camp. A full complement is expected in early 1967.

IV. RESOURCE MANAGEMENT

A. Grazing. None.

B. Haying. About 1335 tons of good quality alfalfa were harvested from 445 acres by 11 cooperators. Alfalfa is used in the normal rotation on croplands and was harvested under the cooperative farming agreements. Alfalfa remained in good condition throughout the season. Harvested alfalfa fields were searched for nest destruction. We found one mallard nest destroyed in our sample area. Although this is rather meager information we estimate that as few as 10 and as many as 25 nests may have been destroyed in alfalfa fields throughout the refuge. Canada geese grazed in almost all of the alfalfa fields during spring and fall migrations. Geese seemed to show some preference for the most recent seedings.

C. Fur Harvest. None. (Authorization to have a late season (January 15 - February 18, 1967) in two units was granted.)

D. Timber Harvest. None.

E. Commercial Fishing. None.

F. Other Uses.
A permit granted a commercial fisherman to hold fish in a 3-acre pond from July 1, through October 31, at a rate of $20 per month; total revenue $80.

A permit granted a tenant-farmer to continue to use the dwelling and outbuildings on a tract of land acquired in the latest Declaration of Take from May 15, through December 31, at a rate of $75 per month; total revenue $375. This permit is still in effect and probably will continue until litigation is completed.

Eleven buildings (from chicken coops to houses) were declared excess and placed on two separate sales. Only one bid on one building, an old barn, was received. It was sold to the bidder for $25.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report.
1. Student Assistant Willard B. Hesselbart reran the vegetative transects. Several species of desirable submergants greatly increased in abundance in carp-free Pool 1.

2. Student Assistant Hesselbart continued his wood duck nesting study for his Masters thesis. In connection with this study Job Corps personnel constructed and placed 51 rocket-type, wood duck, nesting-structures on the refuge. Nine were used and successfully so by wood ducks. Copies of the thesis will be furnished to the Bureau upon completion of the study which has one more year (1967) to go.

3. A large, center-drop, blackbird trap was constructed and operated on the refuge. This was a cooperative venture that involved Wildlife Services, University of Bowling Green, and the State of Ohio. The trap was operated from July 15, through Sept. 30. In July and August a total of 2120 birds were caught, 302 were banded and released, and the remainder destroyed. Not all were redwings. Cowbirds, starlings, and grackles made up over 25 percent of the catch. No report was submitted to the refuge for September.

   Two traps were also constructed and placed on Crane Creek Wildlife Experiment Station and tended by the same graduate student, Robert Schodorf. The catch in these two traps in July and August totaled 7391 birds of which 1468 were banded and released.

   To date the only conclusions that have been passed-on to the refuge are that the method of trapping is rather ineffective and expensive. Mr. Richard Smith with Wildlife Services estimated the cost to be almost $0.25 per bird caught.

4. Mr. Terry Balding, graduate student at Ohio State University, in cooperation with Dr. Bookhout, Unit Leader of the Wildlife Research Unit live-trapped and removed 76 pheasants. The study is for a Ph.D. and will continue through 1967. No progress report has been submitted to the refuge.

5. Captive Goose Flock. A memorandum of understanding between the Bureau and State of Ohio providing for a cooperative venture to establish a free-flying, nesting-flock of Canada geese at Ottawa Refuge was signed late in 1965. The goose pen for the original, captive flock of breeders could not be made ready in time to start production in 1966. In July the State transferred 125 pinioned Canada geese into the pen on the refuge. At least 40 pairs of these are known breeders. Some dike and ditch banks in the pen will have to be reseeded in 1967, but the pen is esentially completed. If all goes well gosling production will start in 1967. Goslings produced in 1967 will not be released to the free-flying stage until January or February of 1969. The project is scheduled to continue for five years.

6. Refuge Banding Program. Ottawa Refuge's banding goal included 1000 post-season mallards (as soon after Jan. 1, 1967 as possible), 500 pre-season wood ducks, 200 pre-season blue-winged teal, and as many local Canada geese as possible. We failed miserably. The following table summarizes our banding attempts.

Species	Adult Male	Imm. Male	Adult Female	Imm. Female	Total
Mallard	112	286	198	377	973
Black	23	53	14	27	117
Blue-winged teal	3	32	10	34	79
Green-winged teal	8	11	9	31	59
Wood duck	9	24	5	6	44
Pintail	5	19	4	21	49
Redhead			1		1
American Widgeon	1		1		2
Gallinule	1				1
Ruddy				1	1
Canada geese*	26	4	20	8	58
Total	188	429	262	505	1384

* 8 females and 9 males included in total were sub-adults.

The geese were all taken with a cannon-net trap, the ducks with swim-ins. As close as we can determine we expended a total of $1,125 in banding operations. This includes $741 for labor, $22 for vehicular use ($.07 per mile), $59 for bait, $292 for transporting bait from Shiawassee, and $11 depreciation of trapping equipment.

In 1964 we banded 192 ducks and have had 22 recoveries reported from Patuxent. In 1965 we banded 1087 ducks with 69 reported recoveries. So far from 1966 bandings we already have 20 ducks and 2 Canada geese recoveries reported. To date our recovery information is still too meager to be very meaningful. Our "band recovery" map, however, is just about the best piece of public relations equipment that we have.

VI. PUBLIC RELATIONS

A. Recreational Uses. Recreation is limited to nature hikes. In connection with these hikes, refuge headquarters serves as a visitors center. Quite often sack lunches are eaten and slides, movies, or talks are presented in the headquarters building after the groups return from hikes. Refuge headquarters can accommodate up to about 40 persons on such occasions.

REFUGE VISITORS

B. Refuge Visitors.

DATE	NAME	AFFILIATION OR ADDRESS	PURPOSE
Jan.			
05-07	C. Scheffee	Regional Office	Rent survey, land acquisition
06	T. Balding	Ohio State University Graduate student	Pheasant trapping program
Feb.			
01	D. Thompson	Ohio Div. of Wildlife	Memo of understanding (Canada goose project)
02-04	L. Dundas L. Kowalski	Regional Office	Inspection tour of Navarre Marsh and Cedar Point Refuge
26	Dr. Hunt and family	Univ. of Michigan	Re wood duck nest studies by Bill Hesselbart for Masters thesis
26	W. Hesselbart	Graduate student Univ. of Michigan	Re wood duck nest study
March			
02	E. Campbell	S.C.S. Soil Conservationist	Conservation farm plans
03	JCCC Coordinator	Washington, D.C.	Inspection of refuges
04 & 08	R. Smith C. McGriff	Wildlife Services, Columbus, Ohio	Predator and blackbird control work
17	Mr. Bartee	Asst. Manager Holla Bend Refuge	Professional interest
17-18	H. Woon	Regional Office	
	Mr. Jacobson	Washington, D.C.	Re Job Corps
	Mr. Dorrell	Washington, D.C.	
22	Dr. Peterle Dr. Barkley Mr. Stone	Ohio State University	Courtesy call

REFUGE VISITORS

B. Refuge Visitors (cont.).

DATE	NAME	AFFILIATION OR ADDRESS	PURPOSE
April			
01	G. Larson	Regional Office	Job Corps projects Refuge familiarization
05	R. Wetzel	Wildlife Services	Refuge familiarization and duck trapping
07	Mr. Landers	O.E.O Coordinator	Refuge familiarization Job Corps projects
11	Mr. Ditman	Regional Office	Discussion and inspection of Ottawa,
	Mr. Umberger	Regional Office	Cedar Point Refuge, Navarre Marsh
14-15	W. Schaefer, H. Woon, F. Martin, L. Kowalski	Regional Office	J.C. work projects and budgeting. Refuges and Navarre Marsh inspection
13 & 20		State Forester	Nature trail plans
May			
10	Winship, Dundas	Regional Office	Aerial photos
24-25-26	E. Crozier, J. Knecht	Regional Office	Cedar Point museum possibilities
	Mr. Isaacson	Park Service	
June			
01	Mr. Danon	Dept. of Int. Auditor	Tour of refuges and JCCC project areas
02	D. Schneider	Wooster Station (Ohio Agr. Res. & Development Ctr.)	Re blackbird study
08	Mr. Danon	Dept. of Int. Auditor	Re Job Corps program
17	Dr. Jackson	Bowling Green Univ.	Re blackbird studies & trapping
30	Mr. Wampler	Dept. of Int. field coordinator	Refuge program and familiarization.

REFUGE VISITORS

B. Refuge Visitors (cont.).

DATE	NAME	AFFILIATION OR ADDRESS	PURPOSE
July			
01	Dr. Jackson & party	Bowling Green University	Re blackbird trapping program and experimental scaring devices
07	Mr. Sommers	S.C.S. Cons. Technician	Re topographic & soil capability mapping on refuge
13	Mr. Kniffin	Game Management Agent Indiana	Courtesy
13	D. Thompson	Ohio Div. of Wildlife	To Navarre Marsh re M.B.C.C. Mtg.
15-30	R. Johnston	Regional Office	Dike survey - Cedar Point Refuge
19	H. Anderson	Outdoor writer Cleveland Press	Familiarization tour of refuges
26		WSPD TV Photographer	Background shots for evening newscast re purchase approval of Navarre Marsh
August			
61		Army Reserve Personnel	Re burning old buildings
09 & 27	Mr. Nauman	Ohio State University	Re duck trapping for study under Dr. Peterle, Ohio State Univ.
Sept.			
02	H. Huenecke	Washington, D.C.	Tour of refuges re Job Corps projects
09	Mr. Nauman	Ohio State University	Duck trapping for exp. study
15	C. Faulkner	Regional Office	Courtesy
	R. Smith	Wildlife Serv., Columbus, O.	
15	Mr. Myerding	Game Management Agent, Mich.	Pick-up of GMA car
21	Mr. Glossa	F.B.I. Agent	Re closing files on suspected arson cases involving refuge houses.
28-29	J. Monnie	Biologist	Tour of refuge and discussion of Mark Twain meeting

REFUGE VISITORS

B. Refuge Visitors (cont.).

DATE	NAME	AFFILIATION OR ADDRESS	PURPOSE
Oct.			
05	J. Richey	Regional Office	Re project areas - Ottawa and Cedar Point Refuge.
07-24	Survey Party	Regional Office	Navarre Marsh Survey
28	F. Carpenter	Regional Office	Inspection tour Refuges and JCCC
	F. Martin		
29	Mr. Jones	Safety Off., Wash, D.C.	
	Mr. Ettleman	JC Education Off., Wash. D.C.	Safety inspection
	F. Martin	Regional Office	
Nov.			
04-05	C. Rollings	Regional Office	Land use inspection and discussion of S & M Program
Dec.			
29-30	W. Hesselbart	Graduate student Univ. of Mich.	Re wood duck nest study
30	T. Balding	Graduate student Ohio State Univ.	Pheasant trapping program

Numerous visits by E. Bosak, GMA - Ohio (in charge); Ottawa Job Corps Conservation Center employees; L. VanCamp, T. Wharton, R. Biggs, J. Staab, P. Weinert, G. Ledbetter, Ohio State Game Protectors; Karl Bednarik, Supervisor, Crane Creek Wildlife Experiment Station; contractors re dike rehabilitation, jetty, and water control structure contracts; present and potential farm cooperators; numerous birders and nature enthusiasts; several hunters and trappers re boundaries of Ottawa and Cedar Point Refuges.

C. Refuge Participation.

Date	Name	Nature of participation (off refuge)
02-08	Manke	Career night (Wildlife Management careers) at Salem Oak Harbor High School, Oak Harbor, Ohio.
02-09	Manke	Participated in Ottawa Job Corps enrollees orientation.
02-16	Manke	Attended Job Corps budget and program meeting, Regional Office.
04-06	Manke	Slide talk to Sr. Gov't classes, Gibsonburg High School, Gibsonburg, Ohio.
04-16	Manke	Attended Crane Creek flood control project meeting, Toledo, Ohio.
05-05	Manke	Slide talk to 9th grade Science classes at Genoa High School (entire day).
05-13	Manke	Slide talk to 8th grade Science classes at Oak Harbor School.
06-04	Manke	Ottawa Job Corpsmen distributed Golden Eagle Leaflets at Fishing Clinic in Port Clinton, Ohio.
06-30	Manke	Attended Ottawa JCCC advisory council meeting.
07-13	Manke	Slide talk to Benton Township Improvement Assoc.
09-14	Manke	Attended Wolf Creek Sportsman's Club waterfowl identification and hunting regulations clinic.
09-21	Manke Bair	Attended advisory council meeting at Ottawa JCCC.
09-27	Bair	Manned Wildlife Station at Ottawa County 6th grade Conservation Field Day.
09-27	All refuge personnel	Attended Ottawa JCCC work leaders meeting.
10-05	Manke	Attended meeting at Ottawa JCCC re visit of Dr. Johnson and Mr. Schaefer.
10-07	Manke	Attended Key Staff Meeting at Ottawa JCCC.
10-17-21	Bair	Attended Land and Water Conservation Fund Meeting.
10-24	Manke	Slide talk to Genoa Kiwanis.
10-31	Manke	Attended Key Staff Meeting at Ottawa JCCC.
11-11	Manke	Attended Ottawa JCCC recognition ceremonies mtg.
11-30	Manke	Attended Ottawa JCCC Community Relations mtg.
01-24-28	Manke	Attended Regional Conference, Minneapolis, Minn.

C. Refuge participation (cont.).

Refuge Tours

01-16 - T.N.A. bird hike - Cedar Point Refuge (15 in attendance).
02-13 - T.N.A. bird hike and slide showing (20 in attendance).
03-13 - T.N.A. bird hike and slide showing (15 in attendance).
03-19 - Bowling Green University, Wildlife Conservation Class.
Heidelberg College, Ornithology Class.
Kirtland Bird Club (75 in attendance).
03-26 - Bird hike - Cedar Point Refuge (6 in attendance).
03-27 - Annual Whistling swan hike - (50 in attendance).
04-17 - T.N.A. Bird hike and slide showing. Ohio Game Protector, John Staab presented movie "Know Your Ducks". 18 in attendance).
06-04 - University of Toledo - Field Trip (15 in attendance).
07-12 - Science Club - Bowsher High School - Field Trip (20 in attendance).
07-19 - High School class - Nature hike (20 in attendance).
07-26 - Maumee Valley Jr. High School Class - Nature Hike - (25 in attendance).
09-10 - T.N.A. Bird Hike (20 in attendance).
09-11 - Ohio Wildlife Management Society - Refuge Tour - (15 in attendance).
10-06 - 8th graders New Regal School - Nature hike - (75 in attendance).
10-24 - Heidelberg College - Conservation Class - Field Trip - (10 in attendance).
11-23 - Ryder Elementary School - 4th graders - Nature hike - (36 in attendance).

D. Hunting. No hunting was permitted on the refuge. Hunting pressure and success on the surrounding area were moderate. An estimated 5,000 ducks and 100 Canada geese were harvested. Hunter-days use computed on the 12-hour day is estimated to be 3,000.

A controlled hunt is conducted at adjacent Crane Creek Wildlife Experiment Station during the first part of the split season, and the area "thrown-open" during the last part (5 days). In 1965 during the controlled hunt 465 hunters took 641 ducks for an average of 1.37 birds per man. During the last five days 480 hunters took 189 ducks for an average of .39 birds per man. Totals for 1965 are 945 hunters took 830 ducks. In 1966 during the controlled hunt 525 hunters harvested 971 ducks for an average of 1.85 ducks per man. During the last five days 260 hunters harvested 80 ducks for an average of .31 birds per man. Totals for 1966 are 785 hunters took 1051 ducks.

E. Violations. Refuge personnel apprehended four "trespassers" with guns in the car, but hunting violations could not be filed. All information was turned over to Game Management Agent Bosak. Refuge personnel also assisted G.M.A. Bosak in a "sink box" case. None have been heard as yet. Refuge personnel also assisted State Conservation Officers on a "shooting-from-the-highway" case. One duck was killed in this incident. This was tried in a State court but the refuge has not been notified of the fines levied.

Last year nine apprehensions were made for hunting on Ottawa and Cedar Point refuges. All information was turned over to Game Management Agent Fuchs. These along with numerous cases made by Agents Fuchs and Bosak were filed with the U.S. Assistant Attorney at Toledo. Lack of help and other pressing matters took precedence and about two or three months ago the Assistant Attorney expressed a desire to close these files with letters of reprimand rather than prosecutions. Whether or not this action was taken is unknown.

F. Safety. As of December 31, 1966, this station had completed a nice, even 1900 days without a lost time accident. We are a little proud and a mighty heap big thankful for this record. Twelve informal safety meetings were held. Subject matter followed the Safety Bulletins and other timely topics. Safety was discussed at each of the combined Job Corps Work Leaders - Refuge Employees meetings. In addition, specific problems and cautions were discussed prior to undertaking any new or seemingly hazardous jobs.

A safety inspection by Messrs. Jones (Safety Engineer, Washington, D.C.), Ettelmen (Job Corps Ed. Off., Washington, D.C.) and Martin (Asst. Supr. of Refuges, Minneapolis, Minn.) October 29, focused special attention on safety matters and equipment. All pieces of equipment and buildings being used were checked and rechecked. Consequently, all are considered in acceptably safe condition. Several improvements were made as a result of the inspection. One suggestion made not as yet implemented is installation of roll-bars on our tractors. We have experienced difficulty in procuring the correct ones.

All personnel are well aware that safety is given much weight in performance ratings.

VIII. OTHER ITEMS

A. Items of Interest.

1. Land Acquisition. No more land was acquired in 1966. Consequently, we still have acquired a total of 4,280 acres with 507 acres yet to be acquired. To date we have paid $1,200,318.68. This expenditure does not include what will have to be paid for 1,263 acres acquired late in 1965 by Declaration of Take. Word of mouth has it that three of the six landowners have settled out of court, but this station has had no official confirmation of such action. No dates have been set for any judicial procedings.

A purchase agreement was signed to acquire the "Navarre Marsh." This is a 535-acre tract with house, garage, barn, and about 20 acres of tillable land. Almost all the rest of the property is marsh. The Narvarre Marsh is located about six miles east of Ottawa, and will be maintained by Ottawa Refuge personnel. We were suppose to gain possession of the marsh on January 1, 1967, but a clouded title has delayed payment and possession.

2. Ottawa Job Corp Conservation Center. References to Job Corps personnel and Corpsmen throughout this report denotes good concert and incorporation. All work leaders enjoy their refuge details much more than their assignments elsewhere. All are interested in wildlife and in furthering the refuge's programs. Some corpsmen really enjoy the refuge work, others could care less. As to be expected most corpsmen fall in between these extremes. For these we need to instill more enthusiasm for conservation and the desire to learn basic concepts. Much planning and scheduling goes into work programs, basic education, and recreation, but little time or thought is devoted to conservation education.

   Operation of the Center has had its good times and bad. Many difficulties have had to be overcome. The dormitory fire, loss of warehouse space at Erie Army Depot, lack of vocational training (shop) and recreational facilities, lack of heavy equipment, have all caused disruptions, deviations, and plain old headaches. On the other hand we have not had the difficulties with surrounding communities.that some centers have had. Generally the news media has been sympathetic and given its support. The behavior of the corpsmen has been excellent. During a full years operation there have been only three incidents involving a few corpsmen. These were "ushered out" of the program immediately.

   Work progress on refuge projects has at times seemed slow. This is understandable in view of the centers difficulties, sharing the work force with Camp Perry, but most of all the total lack of work experience many of these young men have had. Many of us had hoped for "instant refuges" with the advent of the Job Corps. Such is not the case.

3. Two contracts were made the last few days of December. One is for constructing a jetty at the mouth of Crane Creek extending 185 feet into Lake Erie. This is to keep the mouth of the creek free of sand depositions from Lake Erie. The jetty contract is being financed with Job Corps funds and corpsmen will participate in the construction work. The other is to complete the dike around Pool 2 and install a three-way water-control structure that will permit water transfers between Pools 1 and 2 and/or gravity discharge or intake to either of the pools. This is a refuge financed project.

4. Two stolen cars were brought to the refuge and stripped. One was a 1965 Cadillac, the other a 1966 Plymouth Fury. The Cadillac was set on fire and completely ruined. One car was abandoned on Cedar Point Refuge, but returned to the owners. A cache of new automobile tires, wheels, batteries, jacks, seats, and convertible tops was found hidden in a spot less than 100 yards from where the Cadillac had been stripped and burned. These cached items had been stolen from a transport truck parked in Bono, a village that lies close to the refuge boundary.

5. Checks for $11,252.69 and $6,692.36 were turned over to Lucas and Ottawa Counties, respectively. Payments were made under the new refuge revenue sharing act.

6. Parts I and II of the Master Plan for Ottawa Refuge were completed. Part I has been approved. We are awaiting approval of Part II, and working on Part III.

7. Personnel. Mr. Clarence Sayen entered on duty as Biological Aid (Wildlife) April 7. Clarence had been the caretaker-manager for the Cedar Point Gun Club prior to its donation for a refuge. Clarence and Mrs. Sayen live on Cedar Point Road near the entrance to Cedar Point.

   Mr. William Bair transferred from Trempealeau Unit of the Upper Mississippi Refuge as Assistant Refuge Manager. Bill's transfer to Ottawa was effective September 19. He, Mrs. Bair, and the two little "Bares" live on the refuge. Bill is certainly a welcome addition to say the least. Things move when Bill is around. The only drawback is that during the short time he has been here, he has already had four weeks of temporary duty in Washington.

   Again this year, Mrs. Bradley deserves much of the credit for the preparation of this report. She not only typed the report and mounted the pictures, she doubled as the biological statistician compiling days-use, ducks trapped, banding costs, and many other figures.

8. Correction. One last paragraph is added here to correct an oversight. A sandhill crane was observed April 23 and 24. Although this is not a rare occurrence, it is unusual. A few sandhill cranes put in an appearance for a day or two about every other year.

"What so proudly we hail"
66-16-14 - Manke

"Rogues Gallery"

Bair
Sayen
Bradley
Manke
Radsick

67-1-3- Manke

Next eight pictures depict flood damage from April "blow" at Ottawa.

Water topped the "Pintail" dike Lake Erie to left. 66-9-6 - Manke

Another view of "Pintail" dike. 66-9-5 - Manke

"Pintail" dike reduced to about four feet in width. Another "blow" would breach the dike.
66-9-7 - Manke

Sand, gravel, and debris deposited to depth of about four feet at Willow Point.
66-9-10 - Manke

Force of waves and weight of sand tipped steel, sheet piling at Willow Point. 66-9-15 - Manke

Waves eliminated "first story" of this old building at Willow Point. Tipped tree is supporting the second story.
66-9-11 - Manke

High water and waves battered the door, window and front of this cottage. It had been a rather good building. 66-9-14 - Manke

Concrete slabs and supports undercut. Water flowed through this cottage, and about a ton of sand deposited inside the building.
66-9-13 - Manke

The April "blow" also damaged portions of the Navarre Tract - Purchase negotiations underway at the time.

Some two feet of sand deposited over shore-line road.
66-10-5 - Manke

Debris piled on landward side of road indicating height of flood. Debris line some 200 feet from water's edge. 66-10-10 - Manke

Some shore-line erosion occurred.
66-10-9 - Manke

Indicates tremendous force generated.
Riprap and road rock strewn like straws.
66-10-17 - Manke

This was a road with a riprap facing.
66-10-15 - Manke

Riprap and road rock deposited
some 30 feet inside the marsh.
66-10-16 - Manke

Mr. Bair's house during December flood.
66-10-2 - Bair

A rare occurrence mouth of Crane Creek wide open and in original channel. Earth and steel sheet jetty to be constructed 100 feet east (right) of mouth.
66-8-20 - Manke

Aerial view marsh-cropland interspersion.
Winship

Another view of marsh-cropland interspersion.
Pool No. 2 is primary marsh area shown.
Winship

A closer look at Pool No. 2 and muskrat houses.
66-10-11 66-10-12 - Bair

Job Corps crew that worked on woodduck nesting structures.
Ottawa JCCC

They went in for assembly line production.
Ottawa JCCC

Some went on trees.
Ottawa JCCC

Others on posts.
Ottawa JCCC

Student Assistant Hesselbart checking under slightly different weather conditions.
Hesselbart

Wet meadow seeded in 1964 to encourage duck nesting.
66-19-19 - Manke

A closer look.
66-19-21 - Manke

Same area showing height of fescue.
That dark green spot is a Studebaker.
66-19-12 - Manke

Blue-winged teal's nest found about 10 feet
from Studebaker.
66-18-11 - Manke

Mallard resting.
66-21-1 - Manke

Ring-necked pheasant looking for trouble.
66-18-1 - Manke

An active Eagle's nest sans scope.
66-4-4 - Manke

Same nest through scope.
66-4-11 - Manke

Incubation.

66-4-10 - Manke

To no avail.

Hesselbart

Just checking.
Ottawa JCCC

As the old man looks on with some distrust.
66-12-6 - Manke

Job Corpsmen at work "beautifying" headquarters front yard. 66-16-20 - Manke

The finished product.
66-27-3 - Manke

More beautification by Corpsmen with the aid of Army Reserve Unit.
66-22-6 - Manke

Taking Ladybird at her word. Corpsmen removing old decking from bridge.
66-20-17 - Manke

The beams were painted and stringers replaced.
66-24-17 - Manke

Deck replaced and now in use.
66-27-17 - Manke

Our new dike was sown to grasses and cover crop.
66-19-18 - Manke

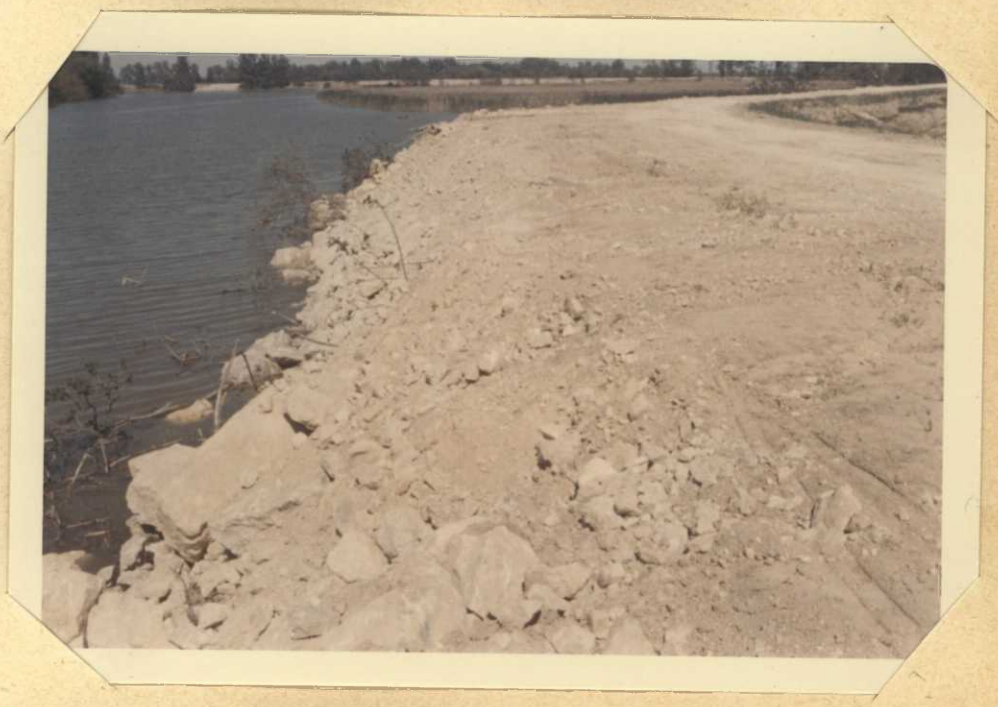
In some spots this was not enough.
66-8-6 - Manke

Erosion became rather severe along Crane Creek.
66-8-8 - Manke

S&M funds were used in the emergency to purchase riprap.
66-15-9 - Manke

More erosion.

66-8-5 - Manke



More riprap.

66-15-6 - Manke

Wet meadow being established on high ground within marsh area with S&M funds.
66-19-20 - Manke

Sometimes crops are irrigated on the refuge.
66-20-5 - Manke

Alfalfa chopper at work on the refuge.
66-26-19 - Manke

From here to the mill for processing.
66-26-10 - Manke

Red-winged blackbird trap constructed on the refuge in cooperation with Wildlife Services and Bowling Green University. 66-16-11 - Manke

Not all of the blackbirds were caught. Mr. Bair inspecting blackbird damage to corn. Martin

A memorandum of understanding between the State of Ohio and the Bureau provides for the establishment of a free-flying, nesting - flock of geese.
67-1-18 - Bair

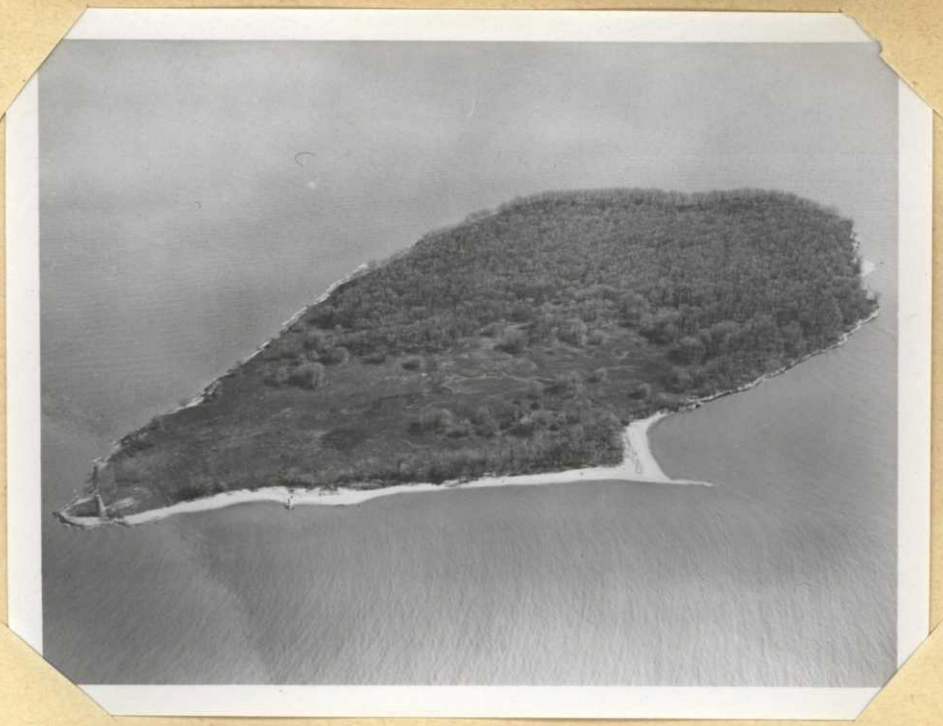
This is a cooperative venture - Here Job Corpsmen are discing cattails in the proposed goose pen area.
66-25-19 - Manke

The second time over makes a lot of difference.
66-25-15 - Manke

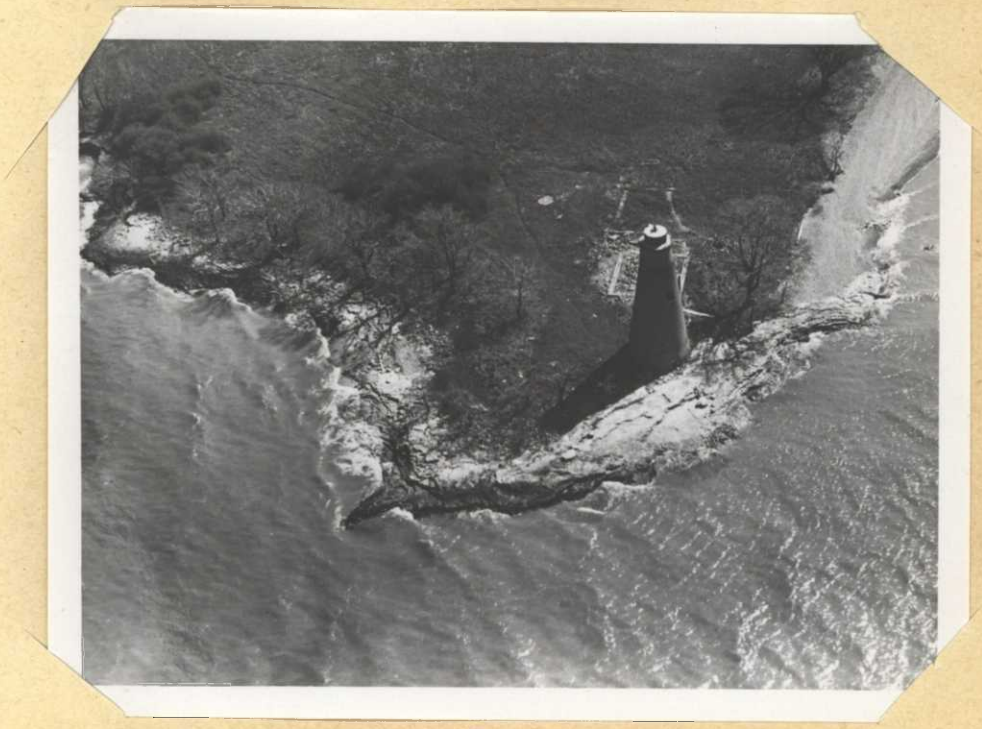
Bureau personnel established the pasture and State personnel constructed the fence and furnished the captive geese. 67-1-20 - Bair

A group of students just back from their nature hike on the refuge being given the opportunity to ask questions. 66-27-18 - Manke

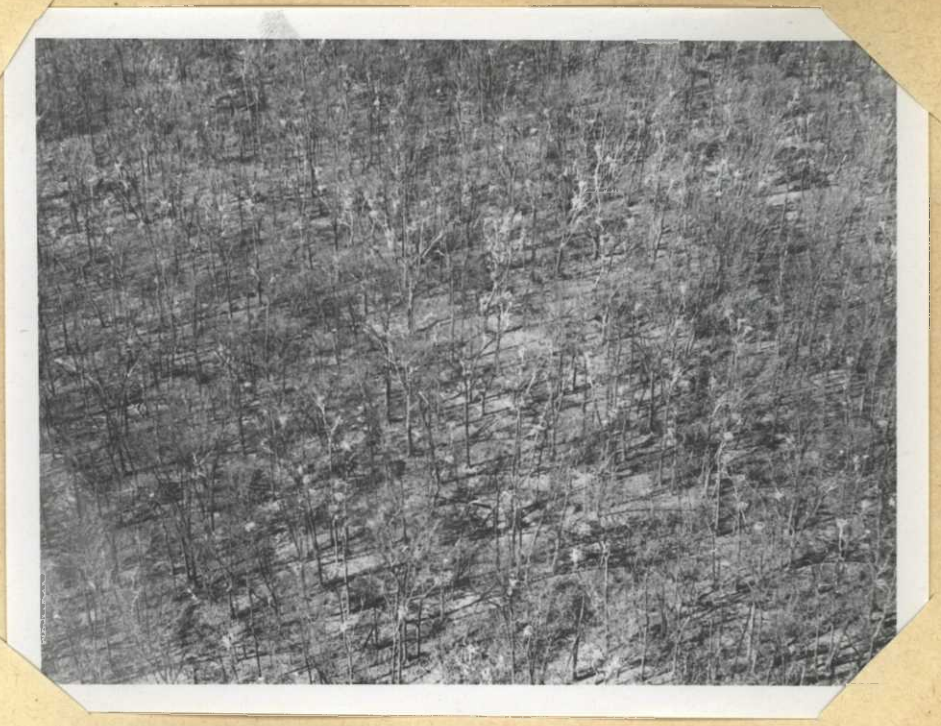
Ottawa Job Corps Conservation Center at Camp Perry.
Winship



82 - acre West Sister Island National Wildlife Refuge
Winship



The shell of an old abandoned lighthouse still stands on the island. Winship



Note nests in trees
Black-crowned night herons, great blue herons,
and American Egrets nest on the island.
Winship

Young egret at nest
Campbell

Triplets

Campbell

What's going on here.

Campbell

Standing watch.

Campbell

A couple of go-go girls.

Campbell

Combination house-lodge and garage at
Navarre Tract.
67-2-15 - Bair

Barn and bin at Navarre Tract.
67-2-14 - Bair

Aerial view of Navarre Marsh.
Winship

SIGNATURE PAGE

Submitted by:

Alfred O. Manke
(Signature)

Alfred O. Manke
Refuge Manager
Title

Date: February 21, 1967

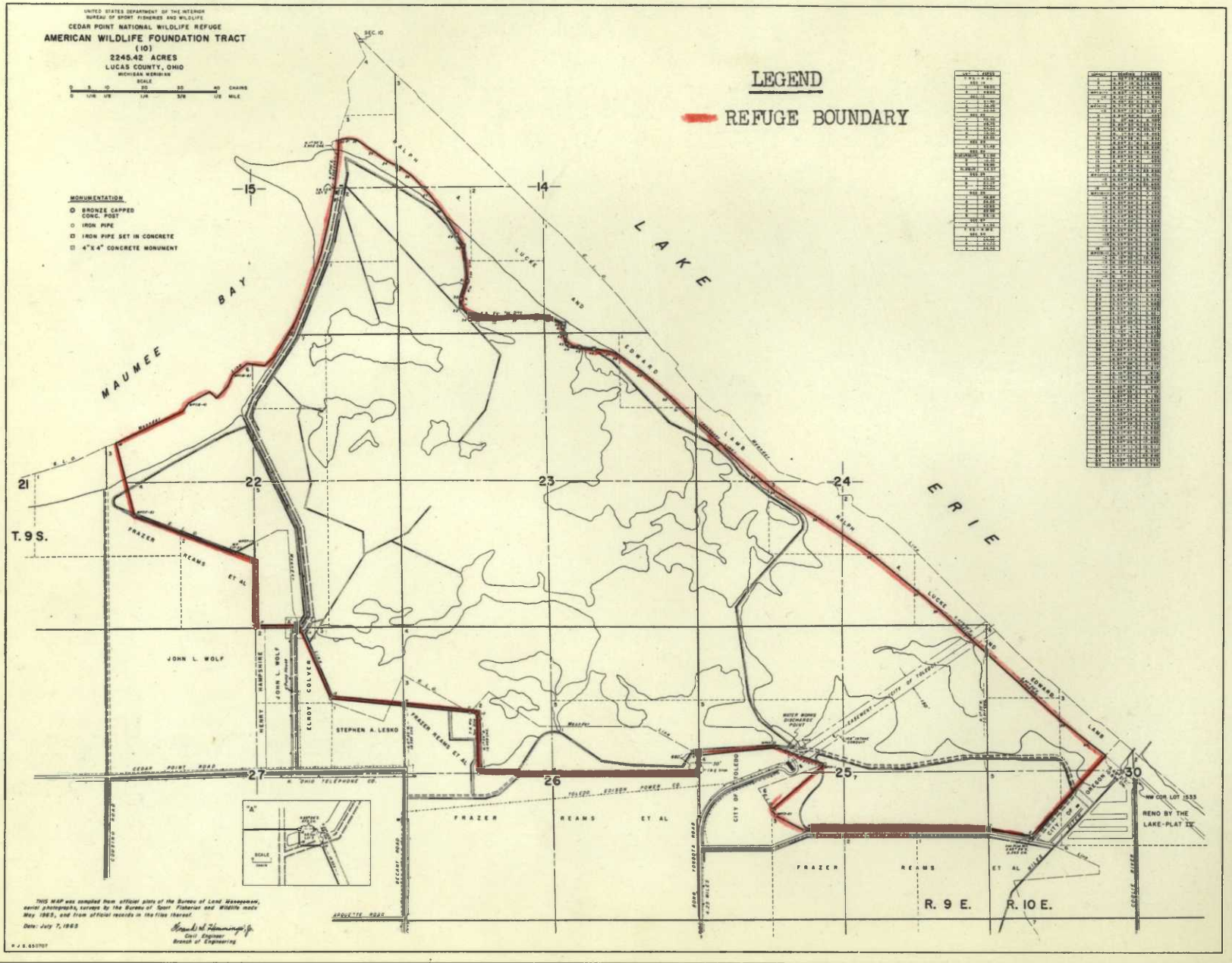
Approved, Regional Office:

Date: 2/23/67

(Signature)

Asst. R
Regional Refuge Supervisor

CEDAR POINT REFUGE


UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES AND WILDLIFE
CEDAR POINT NATIONAL WILDLIFE REFUGE
AMERICAN WILDLIFE FOUNDATION TRACT
(10)
2245.42 ACRES
LUCAS COUNTY, OHIO
MICHIGAN MERIDIAN
SCALE
0 5 10 20 30 40 CHAINS
0 1/16 1/8 1/4 3/8 1/2 MILE
MONUMENTATION
BRONZE CAPPED CONC. POST
IRON PIPE
IRON PIPE SET IN CONCRETE
4"X4" CONCRETE MONUMENT
LEGEND
REFUGE BOUNDARY
MAUMEE BAY
LAKE ERIE
T. 9 S.
R. 9 E.
R. 10 E.
JOHN L. WOLF
STEPHEN A. LESKO
FRAZER REAMS ET AL
CEDAR POINT ROAD
ARQUETTE ROAD
TOLEDO EDISON POWER CO.
CITY OF TOLEDO
WATER WORKS DISCHARGE POINT
RENO BY THE LAKE-PLAT II
NW COR LOT 1533
THIS MAP was compiled from official plats of the Bureau of Land Management, aerial photographs, surveys by the Bureau of Sport Fisheries and Wildlife made May 1963, and from official records in the files thereof.
Date: July 7, 1965
Civil Engineer
Branch of Engineering

C O N T E N T S

I. GENERAL

Cedar Point National Wildlife Refuge is located about 10 miles west and is managed by Ottawa Refuge personnel.

A. Weather Conditions. Same as Ottawa Refuge. See weather section for Ottawa.

B. Habitat Conditions.

1. Water. Water in the two controlled units were at desired levels from January through mid-April. Just prior to the "northeaster" that did so much damage we had started to lower the water levels to facilitate dike work. After the "northeaster" we had no control over the water and the level fluctuated with Lake Erie.

2. Food and Cover. Food was considered adequate for the wildlife present throughout the year. No artificial feeding done. Cover was adequate for all wildlife except waterfowl. In explanation, water is considered waterfowl cover, or at least necessary for waterfowl to avail themselves of cover. At times Cedar Point contained much less water than desired.

Food and cover (water) were available to support the spring migration of waterfowl. Ducks and geese fed in the marsh and in the cropland. After chopping they gleaned what little corn remained after blackbirds, and regleaned the harvested soybean fields. Ducks and geese are much more dependant upon private crop fields at Cedar Point than at Ottawa. We only farm about 90 acres of the 2,250 acres in the refuge. At times, as many or more whistling swans stop at Cedar Point than Ottawa. This year a peak of only 250 were counted. The swans fed exclusively in the marsh. Only on a few occasions have the swans been observed feeding with ducks and geese in flooded corn and soybean fields.

We lost control of the water during the April 26-28 blow, and waterfowl use was rather sporadic for the remainder of the year. Waterfowl use particularly from ducks was normal or above during the periods the marsh contained water, but would drop markedly as the water receded. Old boat lanes, borrow ditches, and depressions held water almost the entire year. Rains and Lake Erie replenished the supply often enough to provide tolerable conditions.

Many other species of wildlife seemed to increase and enjoy the lack of water. Exposed mudflats benefitted many shorebirds. Dwindling pools concentrated fish and frogs for the waders. Less water gave more dry area to pheasants, rabbits, and foxes. To the contrary, our muskrat population decreased.

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl. A total of 12,000 ducks were recorded at Cedar Point in the mid-winter count made on January 4, 1966. About 7,000 were mallards and 5,000 were blacks. As was the case at Ottawa, the waterfowl population dropped sharply shortly after the count. From about mid-January to mid-February the waterfowl population varied between 200 and 1,000 ducks.

   The spring migration began about mid-February. The population jumped to about 5,000 ducks. By the end of February there were 8,000 ducks and 100 Canada geese present. The number of waterfowl remained about the same through March. A peak was reached the last few days of March and first few days of April with about 250 whistling swans, 150 Canada geese, and 8,000 ducks present on the refuge. The population dwindled gradually until the end of April when only 1,500 ducks remained.

   Our summer population leveled off at between 800 and 1,000 ducks. Wood duck production was good, but not so for other species.

   Our lack of water-control and subsequent lack of water showed its effects during the fall migration, particularly late in the year. While Ottawa hit a new peak of 30,000 ducks, the peak at Cedar Point was 8,000. Not a duck or goose was seen on the mid-winter inventory conducted January 9, 1967. Quite-a-drop from last years 12,000.

2. Other Waterbirds. Arrival and departure dates, feeding and nesting habits, and species composition at Cedar Point Refuge are very similar to those reported for Ottawa Refuge. Possibly more black-crowned night herons favor Cedar Point than Ottawa, and vice versa for egrets. Conditions of the day, however, seem to influence these populations as much or more than any year-long attractions.

3. Shorebirds. The predominance of gulls and terns over other birds in this general group is more pronounced at Cedar Point than at Ottawa. The "point" of Cedar Point is the eastern shore-line of Maumee Bay. Gulls congregate in and around the bay. Maumee Bay is a "dumping grounds" for boaters, picnicers, resorters, swimmers, hunters, fishermen, shippers, port facilities, and Maumee River pollutants just to mention a few. Consequently, gulls often find many juicy tidbits in the bay. In their endless search for food they constantly ply the refuge.

4. Doves. No change was noted in the mourning dove population or habits. Mourning doves are year-round residents with peak populations during spring and fall migrations. Some nest on the refuge, but the number of doves on and around the refuges seems surprisingly low. Conditions all seem to favor a much higher population.

B. Upland Game Birds. Upland game species are generally concentrated along the entrance road and higher ground along the south border. This is good for wildlife observations, but leads to erroneous assumptions that the refuge is "loaded." Fewer pheasants were observed along-the-road this year than in previous years. This is attributed to two factors, fewer pheasants and more room for them to spread-out because of less water in the marsh. A good, healthy population is still present.

Last year bob-white quail were dropped from the refuge list because none had been seen for about two years. We are happy to report that a brood was seen and quail are back on the active list again.

No noticeable change occurred in the woodcock population. No census route has been established on Cedar Point.

C. Big-Game Animals. Only a few white-tailed deer use the refuge. To date only tracks of deer have been seen by refuge personnel. This seems to indicate that the refuge is not home-base for the small herd.

D. Fur Animals, Predators, Rodents, and other Mammals. All indications pointed towards a large population of muskrats early in the year. The April flood and subsequent loss of water control greatly curtailed the anticipated population explosion. The flood also reduced the pesky groundhog population. Fox and raccoon seemed to escape the disaster. Fox are particularly numerous. As at Ottawa, fox-hunters are just "itching" to get into Cedar Point Refuge. Cottontail rabbits were also lost in the flood, but enough "seed" survived to repopulate the area in a hurry.

E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies. Only one unusual observation occurred. An osprey, an infrequent visitor, was sighted May 6. The pair of bald eagles that have a nest on the boundary again went through all the preparations, but still no eggs or young produced. Hawk, owl, and crow populations remained much the same as previous years. This general group of birds do not seem to exert any undue pressures on other wildlife populations.

F. Other Birds. Other than the osprey, no other unusual sightings noted. Blackbirds are as abundant and damaging at Cedar Point as at Ottawa. Very little of the refuge's corn survived their onslaught and remained to feed the waterfowl.

G. Fish. Cedar Point waters had been overloaded with carp. After the dike was breached the fish population fluctuated with the water. Some were trapped and/or chose to remain in the old dredge channels. It is hoped that these can be eradicated after the dike is restored but prior to refilling the marsh. There is no question that many more pounds of waterfowl food can be produced in carp-free marshes. It is doubtful that the shallow marsh can support any significant population of fish other than carp.

H. Reptiles. Nothing to report.

I. Disease. A number of dead and dying gulls have been found at Cedar Point. This is not surprising. Cedar Point is the east shore-line of Maumee Bay. Maumee Bay is the area blamed for being the source of the chlorinated-hydrocarbon residues causing the trouble. No other diseases or poisonings observed.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

1. With help of Job Corps Conservation Center, sandbagged and sheathed 200 feet of eroded spots in dike.

2. With help of Job Corps Conservation Center, made one-eighth mile of truck-supporting trail to lake-shore dike.

3. Job Corps "leveled" half-mile of dike-top to assist engineering surveys.

4. Job Corps regravelled one mile of the entrance trail that was damaged in the flood.

B. Plantings.

1. Aquatics and Marsh Plants. None.

2. Trees and Shrubs. None.

3. Upland Herbaceous Plants. None.

4. Cultivated Crops. Two cooperators farmed 87 acres. Crops included corn, soybean, tomato, and clover. Yields were small. Water about two feet deep covered the farm area for almost a week after the storm in late April. The corn was further damaged by blackbirds. Because of the hand-labor involved and consequently the number of people having access into the refuge, tomatoes will not be permitted in 1967. During tomato-harvest time the gate was open much of the time.

   Despite the low yields waterfowl, pheasants, and rabbits fed heavily in the farm area. This demonstrates the need or at least the desirability of farm crops. Since we have only a small amount of cropland at Cedar Point, considerable thought is being given to refuge farming.

C. Collections and Receipts.

   1. Seed or other Propagules. None.

   2. Specimens. None.

D. Control of Vegetation. The trail-sides of the entrance road were treated with 2,4,5-T low volatile ester in February. This was applied as a basal bark treatment during dormancy with a ground sprayer with a directed nozzle. Number 2 diesel fuel was the carrier. Willow, sumac, and dogwood were the target species. Approximately 20 acres were treated. The rate of application was three pounds acid equivalent. Materials cost $205.15, labor $92.00, and equipment $30.00 for a total cost of $326.15 or $16.38 per acre. First-year observations indicate a 95 percent kill. No detrimental effects to other vegetation or wildlife noted. (See map for area).

E. Planned Burning. None

F. Fires. None.

IV. RESOURCE MANAGEMENT

A. Grazing. None. The two run-away steers that inhabited the refuge for about five months were recaptured in February. They were in exceedingly poor condition. Word of mouth has it that one of them had to be destroyed almost immediately.

B. Haying. None.

C. Fur Harvest. None.

D. Timber Removal. None.

E. Commercial Fishing. None.

F. Other Uses. None.

V. FIELD INVESTIGATION OR APPLIED RESEARCH.

A. Progress Report. Again this year, State Conservation Officers were permitted to trap and band ducks on Cedar Point Refuge. This is a carry-over from previous times before it became a refuge. It also helps stretch manpower and fosters law enforcement surveillance. Bureau personnel will probably assume these duties in the near future.

Summary Table of Ducks Banded - 1966

Species	Adult Male	Imm. Male	Adult Female	Imm. Female	Total
Wood duck	40	50	21	28	139
Blue-winged teal	9	73	0	86	168
Mallard	1	0	1	2	4
Black	0	0	2	0	2
Total	50	123	24	116	313

VI. PUBLIC RELATIONS.

A. Recreational Uses. Nature study was the only recreational activity permitted.

B. Refuge Visitors. See Visitors Section for Ottawa.

C. Refuge Participation. See Refuge Participation Section for Ottawa.

D. Hunting. No hunting was permitted on the refuge. Hunter-success on Private Clubs, Maumee Bay, and Lake Erie bordering or being close to the refuge was good. On opening day an estimated 50 Canada geese were taken. At that time about 400 Canada geese were on the refuge. State Conservation Officers actually counted 22 geese harvested at the one private club bordering the refuge. They also saw another 15 shot on Maumee Bay. After opening day our flock-count was about 350 birds. This is the basis for the 50 Canada geese being harvested the first day. Thereafter the hunting success on geese dropped rather sharply, but hunters continued to enjoy good duck-hunting success. Fluctuating water levels in the marsh may have caused the ducks to move about more than normal.

E. Violations. No apprehensions were made. Empty shells and other signs indicated violations that escaped our patrols. See violations section of Ottawa for disposition of previous years apprehensions.

F. Safety. See Safety Section for Ottawa.

VII. OTHER ITEMS.

A. Items of Interest. Much consideration was given to establishing the "National Wildfowlers Museum" at Cedar Point Refuge. Several factors interfere with meeting the criteria necessary. Consequently, Cedar Point Refuge is still being considered as a possible site, but with much less conviction and emphasis. One of the chief concerns is the clause in the title which states Cedar Point must be held for "Wildlife Conservation purposes" or revert to the previous owners or their heirs. Some interpret this in a very narrow sense and others in a very broad sense. The Justice Department interprets it to mean we do not have clear title to the property. As of now the Justice Department's opinion prevails.

This same reversion clause or clouded title is causing other problems. If we do not have clear title, we cannot do any development work. Engineering tells us that we could construct a new "set-back" dike much cheaper than rebuild the old one. Also a "set-back" dike would have more protection at least for the first few years than the old one close to the lake. Under the present title, however, all we can do is "repair" and maintain what is already there. Consequently, as of now we are going to rebuild along the old dike line at a cost of close to one million dollars.

Shoreline and earth-trail eroding in June 1965.
65-C19-9 - Manke

Same spot May 1966, trail completely gone,
sand and debris deposited, and trees toppled.
Ottawa JCCC

Shoreline erosion June 1965.
65-C11-15 - Manke

Same spot May 1966, dike and beach gone
and trees girdled.
66-7-19 - Manke

Erosion believed to have been caused by rock jetty initiating cutting currents, June 1965.
65-C10-16 - Manke

Same spot May 1966, dike, beach, and trees completely gone and water flowing from marsh into Lake Erie. 66-7-16 - Manke

Dike top April 1966, recently cleared and flattened to permit truck access for riprap haul to "endangered" areas. This part of the dike was some 150 feet from Lake Erie shoreline and assumed to be high, dry, and safe.
Ottawa JCCC

Same spot May 1966, dike destroyed, trees toppled and girdled, one mound in old dike left to tell where the rest "went"!
66-6-6 - Manke

Another view of same dike in the two previous photos showing destruction. 66-6-8 - Manke

May 1966, dike gone, sand and rubble deposited, and tree "carried" 150 feet inside marsh.
66-7-9 - Manke

Erosion of dike in June 1965, marsh behind the "preacher."
65-C10-3 - Manke

Practically same spot as above photo, showing dike gone, sand deposition, and water receding from marsh. Ottawa JCCC

Dike erosion June 1965.
65-C10-9 - Manke

Same spot, different view.
Marsh to left, lake to right.
65-C10-1 - Manke

Same spot April 1966, Job Corpsmen started sand bagging eroded spots. Ottawa JCCC

Same spot April 1966, interlocking sheathing being placed on Lake side of sand bags to protect bags from being punctured by debris. Ottawa JCCC

Same spot after storm, trees toppled, no dike.
66-6-19 - Manke

Same spot showing destruction of dike, trees,
and sand bagging project.
Ottawa JCCC

Another view of destruction of
the sand bagging program.
Ottawa JCCC

A closer look to show force of storm.
Ottawa JCCC

Another view of same spot, dike gone,
sand deposition, trees toppled.
Ottawa JCCC

Dikes and trees weren't the only victims.
Ottawa JCCC

Cutting of "east" dike (north of Toledo Pumping Station) reinforced in summer of 1965.
Ottawa JCCC

Reinforced dike gone. This was the first point breached. Sheathing had been fastened to telephone poles for added protection for this "weak spot" in the dike.
Ottawa JCCC

Another look of remains of beach and dike.
Water flowing from Marsh into Lake Erie.
Ottawa JCCC

"Gookey" isn't it.
Ottawa JCCC

Building area was flooded. At the crest of the flood, water was over the "hubcaps" of this grader.
Ottawa JCCC

The dogs would have gotten wet feet this day.
Ottawa JCCC

So would have the cars.
Ottawa JCCC

Also the caretaker.
Ottawa JCCC

May 1962 - Note distance of trees from shoreline.
Campbell

March 1966 - Shoreline erosion - Note tree position.
Campbell

coup de grace

Campbell

SIGNATURE PAGE

Submitted by:

Alfred O. Manke
(Signature)

Alfred O. Manke
Refuge Manager
Title

Date: February 21, 1967

Approved, Regional Office:

Date: 2/23/67

Frank R. Martin
(Signature)

Asst
Regional Refuge Supervisor

Recent Lake Floodings Unprecedented

THE RECENT FLOODING of Point Place and Reno Beach was unprecedented in the history of Lake Erie shore lines. It occurred when water levels were about five inches below the all-time average for April and almost exactly at the average for the past 10 years based on the recent low-water stage.

This was the fourth in a series of inundations. In April, 1929, Bono was threatened and saved by a levee of sand bags. Route 2 was under two or three feet of water and the onion farm to the East became the present Metzger Marsh.

At that time Lake Erie was one foot and seven inches above this year.

From 1943 through 1946 a series of floods took place. This was the most serious period and much property was damaged. Route 2 at Bono, Teachout Road, and Cedar Point Road were impassible at times because of water.

The Erie Marsh clubhouse was isolated along with many homes at Allen's Cove. All this was not unexpected because Lake Erie then was slightly more than two feet above present levels. Howard Farms was not pumped out until 1948.

The years 1952 to 1955 again brought high water and 1952 set an all-time record with levels two feet and seven inches above April, 1966.

Damage was extensive but proportionally lower because new protecting dikes had been built. Sterling Park near Monroe was virtually wiped out.

If a northeast gale similar to the recent one had struck at that time, an estimate of the damage and possible loss of life that would have occurred is staggering.

Every development along Lake Erie and Maumee Bay would have been inundated.

The historical data of the Lake Erie army engineers indicates high lake levels have been present in many other years but no damage has been recorded.

This may be due to two reasons: no northeast storms occurred or the property along the shorelines had not been developed.

In addition to those mentioned, highs within six inches of the all-time peak have occurred in 1838, 1860 to 1862, 1876, and 1913. No pattern has been established by which these build-ups can be forecast.

★ ★ ★

Circumstances Vary

IN 1926, for example, Lake Erie levels were only about eight inches below the all-time April low of 1964. Yet flooding occurred in 1929.

The important lesson to be learned from the history of Lake Erie is flooding may occur under two sets of circumstances.

When lake levels are high, an average strong northeaster will raise the water to flood stage.

When levels are average or only slightly above normal, continued northeasters of gale force will bring floods.

Fortunately, the most severe northeasters have not struck during peak water periods. But any plans for the protection of shoreline property must take this possibility into consideration.

★ ★ ★

Greg Smestad, fishing with his dad John, recently caught a partial albino bluegill at Van Buren Lake. It was silver with a faint blue cast and pale bluish bars on its sides. The eyes were normal. The fish, about six inches long, was returned to the lake. Albinos, other than goldfish, are rare.

★ ★ ★

Parents are continually faced with the question of whether to allow their sons to have a gun.

To answer some of the questions raised, a well-known author, Joe David Brown, has prepared a 24-page booklet entitled "A Boy is a Boy."

He sets forth a realistic approach based on the premise that from the toy gun of the small youngster to the weapon of the soldiers, boys are in contact with guns most of their lives.

For a free copy, write Daisy, Rogers, Ark., 72756.

The first pronounced bird wave of May arrived last Friday night. Warblers, vireos, flycatchers, cuckoos, and olive-backed thrushes were particularly prominent.

Near Reno Beach, John Stophlet and Tom Brindley had an experience rare in birding. Within an hour they discovered three willets, a marbled godwit, and a glossy ibis.

They also found a flock of 35 cliff swallows.

Jim Boardman reported a flight of warblers and other small birds in Woodlawn Cemetery. Some of the species seen by observers were mourning warblers, Philadelphia vireos, short-billed marsh wrens, and most of the later shorebirds.

Errant Steers Rescued After Four Months In Marsh

All last summer, Billy Knitz worked hard picking tomatoes to make money so he could buy two steers for a project toward county fair entry for the Blue Ribbon Producers 4-H Club. Well -- he got the money -- bought the steers -- and felt he was on the way to being the proud owner of a grand champion of the 1966 Lucas County Fair. That was the day after last Thanksgiving.

The next day the two young cattle decided they would like to see the world and promptly escaped. A search was made, day after day, without success. When winter arrived, and still no sign of the missing bovine, Billy all but gave up his potential prize winners as dead.

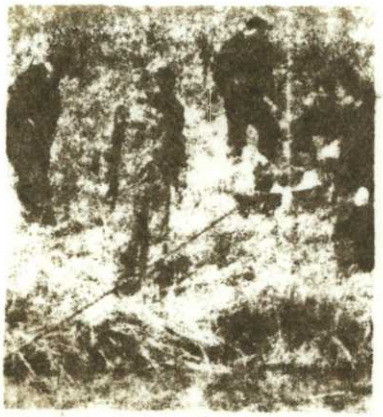
In the meantime, Billy's dad saw to it that he would have an entry in this fall's fair by purchasing two new steers as replacement for the missing ones. Then last week, the caretaker of Cedar Point Wildlife Game Preserve made a definite sighting of the missing cattle in a remote section of the marsh. He informed a neighbor, Charles Hosley, who in turn reported the sighting to the Knitz family, whereupon the search was intensified once more.

Armed with high power field glasses, the rescue team went to work and last Saturday the two wayward animals were sighted, about a quarter mile deep in the marsh. One steer was led out of the tall marsh grass, barely able to walk under his own power from a winter living on marsh grass, but the second one had to be carried as it was now too weak to leave its marsh prison.

Dr. J. J. Quecke, Oak Harbor veterinarian, was on hand to administer first aid to the white face steer as Billy Knitz assists.

The rescue team took a row boat across a ditch and through the grass where they loaded the long-lost steer aboard. A pickup truck acted as a wench to drag the boat to shore, where a vet was waiting to administer first aid. How they managed to survive the winter in their marshy prison is still a mystery and but for the fact that it was a mild winter they might not have made it till spring.

"I'll bet you don't get away again," said Billy after the rescue had been accomplished last Saturday afternoon. "Wouldn't it be funny if he became a blue ribbon winner at the fair after all this," he remarked.



After a long ride through the marsh grass, the rescue team ponders the next move as they approach the ditch.

Billy rides across the water hazard with his long-lost steery to be ready for any emergency. Billy, a sophomore at Clay High School, lives with his parents, Mr. and Mrs. Maynard Knits, at 8350 Cedar Point Road.

Pennsylvania Fire Fighting Platoon On Job At Camp Perry

Providing fire protection and prevention for a community of nearly 8,000 persons and their property at the National Rifle and Pistol Matches has been the crucially important responsibility of a group of Army Reservists from Clearfield, Pennsylvania.

These members of the 487th Engineer Platoon (Firefighting) are farmers, truck drivers, salesmen, schoolteachers, mechanics, and machine operators in civilian life, but for the first two weeks in August they became hosemen, fire inspectors, hydrant men, fire chiefs, and other varieties of smoke eaters while performing their annual unit training.

The Pennsylvania reservists had a large and complicated schedule during their fourteen day stint. In addition to manning the fire station and Camp Perry's three fire trucks (including one they brought from home), on a twenty four hour schedule, the Clearfield firefighters performed their required advanced training in fire control methods and accomplished a controlled burning project for the US Government on the Ottawa Wildlife Refuge. Instructing Job Corps Conservation trainees in firefighting techniques completed the 487th's busy agenda.

Commanding Officer of the firefighting platoon is First Lieutenant Robert F. Brown, a high school teacher from Clearfield. Sergeant First Class Herman G. Potter of State College, Pennsylvania is Platoon Sergeant and Fire Chief, and Staff Sergeant Claude R. Bloom, a Clearfield truck driver, is the Unit Fire Inspector. Other members of the 23 man platoon live in LaGose, Houtzdale, Morrisdale, Munson, O'Shanter, Curwensville, Glen Richey, Bigler, and Coalport, Pennsylvania.

The Pennsylvania firefighters from the Army Reserve received high praise from National Match officials for their outstanding performance of duty while at Camp Perry. Lt. Brown had proud words for the men of the platoon, voicing his pleasure in their efficiency and enthusiasm. Sergeant Potter indicated that the Job Corps trainees were eager to learn and provided fine instructional experience for the 487th.

All of the fireman from Clearfield indicated their satisfaction with their tour of duty at the National Matches, but their controlled burning project for the government was an entirely new experience for them, since they were required to set fires instead of putting them out. In fact when they fired the first condemned house on the wildlife refuge, it took them 40 minutes to get the building to burn. The primary purpose of controlled burning is to destroy unwanted buildings or natural areas without allowing the fire to spread.

County To Receive Funds

OAK HARBOR — Checks for $11,252.69 and $6,923.36 were presented to Lucas and Ottawa Counties, respectively, by virtue of the National Wildlife Refuge Revenue Act, P.L. 88-523.

These payments are based on three fourths of one per cent of the value of the lands acquired in the two counties for Ottawa and Cedar Point National Wildlife Refuges. Through P.L. 88-523, payments based on this formula, or 25 per cent of the refuge receipts whichever is larger, will be made to the counties by the Bureau of Sport Fisheries and Wildlife annually.

Land acquisition for Ottawa Refuge is still in progress. Consequently, the two counties will receive more money in future years as the land is acquired.

These funds are to be expended only for the benefit of public schools and roads. The actual distribution between roads and schools is determined by the counties, but each must receive a share.

Alfred O. Manke, Refuge Manager, will present the check to Lucas County at the Lucas County Auditor's Office, Monday, Sept. 26, at 2 p.m.; and the check to Ottawa County at the Ottawa County Auditor's Office, Tuesday, Sept. 27, at 2 p.m.

Counties Receive $18,176.05 From Wildlife Service

Oak Harbor, Ohio — Checks for $11,252.69 and $6,923.36 were presented to Lucas and Ottawa Counties, respectively, by virtue of the National Wildlife Refuge Revenue Act, P.L. 88-523. These payments are based on ¾ of 1% of the value of the lands acquired in the two counties for Ottawa and Cedar Point National Wildlife Refuges. Through P.L. 88-523, payments based on this formula, or 25% of the refuge receipts whichever is larger, will be made to the counties by the Bureau of Sport Fisheries and Wildlife annually.

Land acquisition for Ottawa Refuge is still in progress. Consequently, the two counties will receive more money in future years as the land is acquired.

These funds are to be expended only for the benefit of public schools and roads. The actual distribution between roads and schools is determined by the counties, but each must receive a share.

Counties Are Paid For Refuge Land

Lucas County is $11,252 richer as the result of the purchase by the Federal Government of additional land as a wildlife refuge in Jerusalem Township.

William C. Galvin, county auditor, said a check which he received is earmarked for schools and roads in the county, but he is not certain how to apportion the amount. Ottawa County received $6,700 for the same reason. The checks represent 0.75 per cent of the land value of the Ottawa National Wildlife Refuge.

Jetty Near Bono Planned By U.S.

The U.S. Department of the Interior, Fish and Wildlife Service, has applied for a federal permit to construct a steel sheet-pile jetty extending 180 feet into Lake Erie, approximately 260 feet southeasterly from the mouth of Crane Creek near Bono, O.

Any written protests to this action must be filed with the Department of the Army, Detroit District, Corps of Engineers, Box 1027, Detroit, by 4:30 p.m. Oct. 17.

REFUGE TO GET STEELJETTY

Congressman Delbert Latta of Ohio's Fifth District announced today that a Federal contract award for $36,025, has been made to the Wohloer-Socie Company of Toledo, Ohio, by the U.S. Department of Interior. Purpose of this contract is for the fort steel sheet piling jetty and earth work at the Ottawa National Wildlife Refuge near Oak Harbor, Ohio.

Wildlife Refuge Adds 535 Acres

Alfred Menke, refuge manager, reported today that the acquisition of an additional 535 acres of land for the Ottawa Wildlife Refuge has been authorized by the Migratory Bird Conservation Commission. Secretary of the Interior Stewart L. Udall, commission chairman, made the official announcement Thursday.

The new property, located approximately five or six miles east of the main section of land, which is situated at the Ottawa-Lucas counties border just north of Route 2, will be purchased from private individuals.

The addition to the Ottawa Wildlife Refuge will be primarily marsh lands with approximately seven acres of wooded area according to Menke. Pumping and dike facilities on the land will be improved and replaced as needed.

This new acquisition will be the third section of land operated under the jurisdiction of the Ottawa Wildlife Refuge. The main area, located approximately one half in Ottawa county and one half in Lucas county, consists of 4,300 acres of land purchased by the federal government. The Crane Creek State Beach park forms the eastern boundry.

A section of 2,250 acres, known as the Cedar Point Wildlife Refuge, also is operated by the Ottawa officials. This section, located about five miles west of the main area, was donated by Cedar Point Gun Club members some time ago.

Menke reported that purchases of this type are made from 'Duck Stamp Funds'. Hunters are required to buy Migratory Water Fowl Hunting Stamps ('Duck Stamps') and the funds from these purchases are used to purchase wet lands.

Lake Erie Island Included In Study

Eighty-two areas among existing wildlife refuges, including the 82-acre refuge on West Sister Island in Lake Erie, have qualified for study and possible inclusion in the new National Wilderness Preservation System, the Department of the Interior has announced.

The West Sister Island area is the only parcel in Ohio selected for study under the Wilderness Act of 1964. This act authorizes new protection for wilderness areas, which can be kept isolated from civilization and in a state of unspoiled natural beauty.

Areas which are to be preserved as wilderness will be given special protection, and visitors will be able to gain access only by foot trails. Hunting will be prohibited.

Teal Season Opens Friday

IF ALL the predictions of various fish and game departments, Ducks Unlimited, sportsmen's organizations and rural mail carrier counts run true, hunters should find more game in their bags this fall.

Lew Klewer

Of course this is predicated on whether the weather cooperates, shooters can hit their targets, dogs or hunters can find the birds after they are knocked down, and whether the gunners are in physical shape to put in a little extra exertion in finding game.

There is not unanimous opinion on the increase in game, whether it be rabbits, woodcock, ducks, pheasants or geese. In the waterfowl field, especially, there is a wide discrepancy in how large the increase is going to be.

Karl Bednarik, waterfowl supervisor for the Ohio Division of Wildlife and in constant contact with biologists of the U.S. Fish and Wildlife Service as well as the various states in the Mississippi Flyway, says he expects a moderate increase of about 20 per cent in ducks.

Bud Porter, a representative of Ducks Unlimited who has just returned from a trip to the duck factory area of the Canadian prairie provinces, spoke at an organization meeting of the Northwestern Ohio Ducks Unlimited Chapter at the Toledo Club Thursday. He said there was an increase of 37 per cent of ducks returning to the prairie provinces last spring and that an increase of about 40 per cent over last year can be expected in ducks returning this fall.

Jimmy Robinson, one of the best known national writers on waterfowl, said there would be a moderate increase. Jimmy, in talking to me recently at the Grand American Handicap at Vandalia, said the mallard supply is still down from what it should be.

Holds Duck Clinic

TO HELP Toledo area waterfowlers with their identification, the Ohio Division of Wildlife will hold a duck clinic Tuesday at 8 p.m. This will be at the Wolf Creek Sportsmen's Club on Teachout Road north of Route 1.

John Staab, Lucas County game protector, is in charge of the meeting and says the motion picture "Calling All Ducks" will be shown as a further aid to identification.

The teal season, which opens Friday, has shooting hours from sunrise to sunset. The regular duck season which opens Oct. 22, has shooting hours from a half hour before sunrise to sunset, a half hour longer than is permitted for teal hunting.

Magee Marsh will not be open to teal hunting this fall. Last year only 28 teal were taken by about 400 hunters during the special season. Karl Bednarik, the manager, says the Division of Wildlife didn't feel there was enough of a harvest to make it worthwhile.

Teal like shallow water and prefer marshes where the water is not more than about 10 inches deep. Magee Marsh is managed mainly for the larger species of ducks which require a greater depth of water. However Metzger Marsh will be open for teal hunting.

At the Ottawa National Wildlife Refuge there are many more teal than usual. John Staab, who has been trapping and banding ducks for the Wildlife Division, says there are about 2,000 there now, many more than usual.

One of the reasons may be because water in the reserve is down and the traps have had to be moved serveral times because water was even too low for bluewings. Practically all teal are bluewings as only one green wing has been trapped. Greenwings are more a northern duck than bluewings and arrive in this area later.

Forms DU Chapter

DUCKS UNLIMITED, which establishes and maintains many duck nesting areas in

Canada, is at work now on an Ohio project in the general area of The Pas, Manitoba. A Northwestern Ohio Chapter of DU is being organized in Toledo with James Secor, 3712 Brookside, as chairman. He is urging all interested to contact him at once.

Goose populations are about the same as last year. Some predictions are for a slight increase, some for a slight decrease and some about the same. No check has been made on blue and snow geese. This generally comes to light after these waterfowl reach the hunting grounds along James Bay.

Goose hunting in that area embracing Magee Marsh, Metzger's Marsh and the Ottawa National Wildlife Refuge will be closed and will continue to be closed for a number of years.

Efforts are being made to establish a resident breeding flock of Canada geese on the Ottawa Refuge. The eastern section, about 200 acres adjoining Magee Marsh, has been set up as a nesting area and about 150 pairs of mated geese, all wing clipped, have been settled there.

This is expected to be the nucleus of a large resident population such as has been established at Lake St. Mary's and Killdeer Plains. It is hoped that this will soon attract as many as 50,000 Canada geese during the season with the overflow providing plenty of goose hunting for area shooters.

The area includes all that territory from Wards Canal on the west, east and north of Route 2 to Locust Point. Duck hunting will be permitted in this area, on Magee Marsh by state permit, and open public hunting on Metzger's Marsh.

Pheasants Up

PHEASANT populations are reported to be up slightly in most areas, according to surveys. Lenawee County, where the birds have been down for a number of years, should be about normal, according to John Boudreau, Michigan conservation officer for that county.

Pheasants are reported up slightly in some sections of Monroe county as they are in Lucas and several other northwestern Ohio counties.

No one, however, is expecting the numbers of ringnecks to be anywhere near like they were a decade or so ago and certainly not in the numbers they were in the 40s and early 50's. The marsh areas are expected to produce the most birds.

Rabbits are up in most areas with the animals ranging from babies to fullgrown. A great number of immature rabbits are being seen now and these should be adults by hunting season. That is if they can stay off the roads and away from predators in the meantime.

Raccoon and opossum are about as numerous as ever. There was a good supply of fox last winter and their numbers are expected to be about as numerous this winter. Muskrats are about the same as last year, mink is anyone's guess and weasels seem to have increased.

Mourning doves, which are a game bird down south but not in Ohio have increased. A flock of more than 350 were seen feeding in a field on the Holloway farm on Lose Road recently and, outside of blackbirds of various kinds, are probably the most numerous birds seen along country roads.

GOOSE HUNTING BANNED IN ABOVE AREA

Efforts being made to establish Canada population

Latta Promises To Back Blackbird Research Program

By GLENN D. EVERETT
Daily News
Washington Correspondent

WASHINGTON — Rep. Delbert L. Latta (R.) of Bowling Green said he will support a proposed $1,000,000 a year research and demonstration program of the U.S. Fish and Wildlife Service aimed at reducing and controlling the depradations of blackbirds and starlings against farmers.

Latta said that the Fish and Wildlife Service will shortly give Congress, at request of members of the Ohio delegation a report showing that at least $58,000,000 a year in crop damage is being caused by the "population explosion" among red-winged blackbirds and starlings. The report will estimate the current U.S. population of blackbirds at one-half billion.

Once exclusively a marsh dwelling bird, the red-wing is now nesting widey throughout the U.S. and crop damage ranges from California grapes to Ohio corn and Massachusetts cranberries.

The current 1966 budget is $660,000 for research on bird depradations. With an additional $1,000,000, the Department of Interior estimates that it could engage the services of 59 biologists, 10 to work on research in Washington, and 40 to conduct field tests and demonstrations. The additonal budget would provide $200,000 for research and $800,000 for the field tests.

The field tests would be devoted to "birth control" measures, such as the spreading of non-toxic chemicals which cause infertile eggs to be laid, the use of bird distress calls and other noisemakers to frighten flocks away from ripening fields, and the development of traps that would be selective in eliminating only the unwanted species.

Latta said that he has enlisted the support of Rep. Frank T. Bow (R.) of Canton, ranking GOP member of the House Appropriations Committee, to sponsor the additional funds for bird control.

"We may have difficulty with the Bureau of the Budget which is trying to curtail all expenditures except the war in Viet Nam," Latta said. "However, if we intend to raise the food at home needed for our world commitments, we're going to have to do something about the increasing bird depradations and I think it is a sound investment."

He also pointed to the damage being caused by starlings which eat in the fields by day but roost at night in huge flocks on city buildings. He said many city dwellers join farmers in feeling "it is time to do something."

Numbers Increase

Blackbird Aid Promised

By GLENN D. EVERETT
Daily News
Washington Correspondent

WASHINGTON — Embattled Ohio farmers, facing a $15 million crop loss this year from hordes of red-winged blackbirds, have won a promise from Department of Interior officials that they will seek at least $1 million in research funds in the budget next year to find ways of controlling the "population explosion" among the birds.

The delegation was led by Congressman Delbert L. Latta (R.) of Bowling Green, who arranged the conference.

Latta attempted unsuccessfully several months ago to add $1,000,000 in research funds to the Department's annual appropriation bill but failed when it was pointed out the funds had not been requested in the President's budget nor authorized by Congress.

John Gottschalk, director of the Bureau of Sport Fisheries and Wildlife in the Department of Interior, promised that an appeal will be made to President Johnson and to Bureau of the Budget officials to provide more research help.

Government officials attending the meeting were given a graphic description of the devastation being wrought by the birds. Clayton Oyler of Hebron drew laughter when he said he was from "Licking County which we are beginning to call Pecking County."

Sandusky County extension agent Glenn E. Meedy of Fremont told in detail how farmers in that county alone suffered $866,000 in crop losses this fall because of the huge flocks of hungry birds. Lester Goetz of rural Oak Harbor described the damage in Ottawa County.

Latta said depredations have been the heaviest ever known in his home county, Wood County.

"We've got to so something about this or have our farmers stop growing corn, beans, tomatoes and several other crops as well," Latta declared.

Dean W. E. Knauss, veteran director of the Ohio Agriculture Research station at Wooster, estimated that there are ten times as many blackbirds today as a decade ago and 20 times as many as there were a generation ago.

He attributed the tremendous growth in bird numbers to the absence of predators such as foxes, skunks and snakes which used to take a toll of blackbird eggs. Many of these predators are killed on highways, he said, and their absence has upset the "blananee of nature."

The blackbirds have adapted to nesting in alfalfa fields and now range far inland from their former nesting grounds in swamps and marshes.

He said the damage is increasing year by year and suggested that artificial means must be undertaken to restore a natural balance which sees blackbirds crowding out all other forms of bird life.

The blackbirds are often starving, he said because of their great increase in population and this makes them eat foods, such as beans, they would ordinarily not touch if they had enough insects and other natural foods. The farther inland the flocks move, the more they depend on the food farmers all to unwillingly provide in their neighboring fields, the dean suggested.

Latta said he considered the conference very sucessful and added, "No conservationist or bird-lover can ignore the fact that the blackbirds are breeding too rapidly and have become much too costly a nuisance to be tolerated."

He added that he is confident research will provide a means of reducing blackbird numbers to former levels without seriously disturbing other forms of wildlife — and, in fact, helping them by removing the fierce competition of the voracious blackbirds.